May 12, 2016

Via Overnight Delivery

BLM Director (210)
Attention: Protest Coordinator, WO-210
20 M Street SE, Room 2134LM
Washington, D.C. 20003

Via Regular Mail

BLM Director (210)
Attention: Protest Coordinator
P.O. Box 71383
Washington, D.C. 20024-1383

RE: Administrative Protest of the Final Environmental Impact Statement and Proposed Resource Management Plan for the Revision of the Resource Management Plans of the Western Oregon Bureau of Land Management Districts of Salem, Eugene, Roseburg, Coos Bay, and Medford, and the Klamath Falls Resource Area of the Lakeview District

Greetings:

Please accept this protest of the Final Environmental Impact Statement ("FEIS") for the Revision of the Resource Management Plans of the Western Oregon Bureau of Land Management ("BLM") Districts of Salem, Eugene, Roseburg, Coos Bay, and Medford, and the Klamath Falls Resource Area of the Lakeview District, and the Proposed Resource Management Plan ("PRMP") contained therein, on behalf of the following groups:

- Klamath-Siskiyou Wildlands Center
- Oregon Wild
- Pacific Coast Federation of Fishermen's Associations
- Institute for Fisheries Resources
- Pacific Rivers
- Umpqua Watersheds
- Coast Range Association
- Cascadia Wildlands
- The Wilderness Society
- Sierra Club, Oregon Chapter
- Western Watersheds Project
- Center for Biological Diversity
- Bark
- Friends of the Kalmiopsis
- Conservation Northwest

- Soda Mountain Wilderness Council
- American Bird Conservancy
- Defenders of Wildlife
- Williams Community Forest Project
- Deer Creek Valley Natural Resources Conservation Association
- Audubon Society of Portland
- Geos Institute

This protest is filed in accordance with 43 C.F.R. § 1610.5-2 and contains: (1) a description of the interests of the protesting parties, and, appended, a list of the names, mailing addresses, and telephone numbers of the above-listed groups; (2) a statement of the issues being protested; (3) a statement of the parts of the FEIS/PRMP being protested; (4) references and dates identifying when these issues were discussed for the record; and (5) a concise statement explaining the various ways that the BLM acted unlawfully or in error.

This protest is timely as the Federal Register Notice announcing the 2016 Western Oregon Plan Revisions ("2016 WOPR") was published on April 15, 2016, 81 Fed. Reg. 22305 (April 15, 2016), and this protest is being filed on or before May 16, 2016, the next business day within thirty (30) days after the Notice. 43 C.F.R. 1610.5-2(a)(1).

INTERESTS OF THE PARTIES

The members of each of the above-listed organizations use the BLM public lands that will be managed under the 2016 PRMP for recreational, scientific, aesthetic, and commercial purposes. Each of these organizations and their members derive recreational, scientific, aesthetic, and commercial benefits from these lands through wildlife observation, study and photography, and recreational pursuits such as hiking, camping, hunting, and fishing. The aesthetic, conservation, recreational, commercial, scientific, and procedural interests of these organizations and their respective members have been, are being, and will continue to be adversely affected and irreparably injured by BLM's failure to comply with the law.

The above-listed organizations have all actively participated in the BLM's Western Oregon Plan Revision planning processes for many years, including by submitting scoping comments and comments on the draft environmental impact statement for the 2016 PRMP. Indeed, some of the above organizations have brought litigation that either resulted in BLM following its regulations by providing a protest period, *Oregon Wild v. Shepard*, No. 08-1280-MO (D. Or.), or led to withdrawal of prior versions of WOPR, P*ac. Rivers Council v. Shepard*, No. 03:11-CV-00442-HU, 2011 WL 7562961 (D. Or. Sept. 29, 2011), *report and recommendation adopted as modified*, No. 03:11-CV-442-HU, 2012 WL 950032 (D. Or. Mar. 20, 2012); *Pac. Rivers Council v. Shepard*, No. 12-35570 (9th Cir. Mar. 1, 2013) (opinion and order dismissing appeal by timber intervenors for lack of jurisdiction and upholding district court decision in its entirety).

STATEMENT OF THE ISSUES BEING PROTESTED

The planning area for the 2016 PRMP covers approximately 2.5 million acres of BLM-administered land in western Oregon. Resource Management Plans define the management direction for individual BLM districts or BLM resource areas. The 2016 FEIS/PRMP describe a Proposed Resource Management Plan for five districts – Coos Bay, Eugene, Medford, Roseburg, and Salem – and a portion of the Klamath Falls Resource Area of the Lakeview. The PRMP would significantly increase destructive logging, road construction, and off-road vehicle use in forests administered by BLM in western Oregon. Riparian reserves under the Northwest Forest Plan ("NWFP") would be significantly reduced in size and permissible management activities in these reserves would be sharply increased, threatening streams, rivers and fisheries; older forests and dependent wildlife throughout the BLM lands covered by the 2016 PRMP (and beyond) would be at increased risk; and much of the timber volume from lands covered by the 2016 PRMP would come from clearcuts.

For the reasons described below, the adoption of the PRMP would violate the Endangered Species Act ("ESA"), 16 U.S.C. §§ 1531-1544, the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321-4370f; the Federal Land Policy and Management Act ("FLPMA"), 43 U.S.C. §§ 1701-1785; the Oregon and California Lands Act ("O&C Act"), 43 U.S.C. § 1181a; the Federal Water Pollution Control Act ("Clean Water Act"), 33 U.S.C. §§ 1251-1387; other federal laws discussed herein; and agency policy and guidance.

PORTIONS OF THE PLAN AMENDMENT BEING PROTESTED

All portions of the 2016 FEIS/PRMP are being protested, including Chapter 1 (Introduction, Purpose and Need), Chapter 2 (PRMP and Alternatives), Chapter 3 (Affected Environment), Chapter 4 (Consultation and Coordination), and Appendices A through X (Major Legal Authorities, Management Objectives and Direction, Vegetation Modeling, Wildfire Modeling within the Range of the Northern Spotted Owl, Air Quality, Areas of Critical Environmental Concern, Climate Change, Fire and Fuels, Fisheries, Best management Practices, Livestock Grazing, Energy and Minerals, Rare Plants and Fungi, Recreation, Socioeconomics, Motorized Access, Tribal, Other Wildlife, Northern Spotted owl, Wild and Scenic Rivers, Monitoring, response to Comments, Guidance for Use of Completed RMPs).

REFERENCES AND DATES THE ISSUES WERE DISCUSSED FOR THE RECORD

The above-listed organizations commented on the 2016 DEIS for Resource Management Plans for Western Oregon in a timely and substantive manner. The points raised in this protest were identified and raised in these comments. Comments relevant to this protest can be found at the following link:

http://www.blm.gov/or/plans/rmpswesternoregon/files/public_comments/rmpwo_organization_comments_11302015.pdf

and within this link at the following pages:

- Klamath-Siskiyou Wildlands Center (June 23, 2015, PDF pages 2472-2484; July 21, 2015, PDF pages 2501-2786; August 14, 2015, PDF pages 815-1249; August 18, 2015, PDF pages 2834-2839; August 20, 2015, PDF pages 176-427; August 21, 2015, PDF pages 1611-1864);

- Umpqua Watersheds (June 23, 2015, PDF pages 2472-2484; August 14, 2015, PDF pages 815-1249; August 20, 2015, PDF pages 10-107; August 20, 2015, PDF pages 176-427);

- Coast Range Association (August 14, 2015, PDF pages 815-1249; August 20, 2015, PDF pages 176-427; August 21, 2015, PDF pages 1254-1276);

- Pacific Coast Federation of Fishermen's Associations (May 5, 2015, PDF pages 1380-1382);

- Pacific Rivers Council (undated, PDF pages 2362-2412)

- Institute for Fisheries Resources (May 5, 2015, PDF pages 1380-1382);

- The Wilderness Society (August 18, 2015, PDF pages 2834-2839; August 20, 2015, PDF pages 176-427);

- Oregon Wild (June 18, 2015, PDF pages 2468-2469; June 23, 2015, PDF pages 2472-2484; August 14, 2015, PDF pages 815-1249; August 18, 2015, PDF pages 2834-2839; August 20, 2015, PDF pages 176-427);

- Sierra Club (August 14, 2015, PDF pages 815-1249; August 18, 2015, PDF pages 443-445; August 20, 2015, PDF pages 176-427);

- Cascadia Wildlands Project (June 23, 2015, PDF pages 2472-2484; August 14, 2015, PDF pages 815-1249; August 20, 2015, PDF pages 176-427);

- Western Watersheds Project (August 20, 2015, PDF pages 176-427);

- Center for Biological Diversity (June 23, 2015, PDF pages 2472-2484; August 14, 2015, PDF pages 815-1249; August 20, 2015, PDF pages 176-427);

- Bark (August 14, 2015, PDF pages 815-1249; August 20, 2015, PDF pages 176-427);

- Friends of the Kalmiopsis (August 14, 2015, PDF pages 815-1249; August 20, 2015, PDF pages 176-427);

- Conservation Northwest (August 20, 2015, PDF pages 176-427);

- Soda Mountain Wilderness Council (June 23, 2015, PDF pages 2472-2484; August 18, 2015, PDF pages 2834-2839; August 20, 2015, PDF pages 176-427);

- American Bird Conservancy (August 14, 2015, PDF pages 815-1249; August 20, 2015, PDF pages 535-787; August 21, 2015, PDF pages 1277-1419);

- Defenders of Wildlife (August 20, 2015, PDF pages 176-427);

- Williams Community Forest Project (June 23, 2015, PDF pages 2472-2484; August 20, 2015, PDF pages 176-427);

- Deer Creek Valley Natural Resources Conservation Association (July 21, 2015, PDF pages 2491-2500; August 20, 2015, PDF pages 176-427; August 21, 2015, PDF pages 1520-1601); and

- Audubon Society of Portland (August 20, 2015, PDF pages 176-427).

Supplemental citations to these and other comments on the DEIS appear in connection with specific points in the protest below.

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CONCISE STATEMENT OF PLAN VIOLATIONS

During the late 1980s and early 1990s, a series of lawsuits uncovered "a remarkable series of violations of the environmental laws," and "a deliberate and systematic refusal … to comply with the laws protecting wildlife."[1] A number of these lawsuits were against the BLM.[2] To end the gridlock, then-President Clinton directed both the Forest Service and BLM to craft a comprehensive, long-term management strategy for federal forests within the range of the Northern Spotted Owl that would be "scientifically sound, ecologically credible, and legally responsible."[3] The agencies assembled a team of scientists, called the Forest Ecosystem Management Assessment Team ("FEMAT"), to develop ecosystem management strategies that would meet this goal.[4] The final result was the Northwest Forest Plan ("NWFP"), an ecosystem management plan that contained standards and guidelines for managing Forest Service and BLM public lands, created old-growth and riparian reserves, and provided for continued timber harvest. This Plan has been upheld by the federal courts in challenges both from the timber industry and from conservation groups. The courts also have rejected prior BLM efforts to revise its RMPs to purportedly meet the objectives of the NWFP without actually following it.[5]

The 2016 WOPR marks yet another attempt to circumvent the ecosystem management standards of the Northwest Forest Plan. Like its predecessor attempts, the 2016 WOPR is arbitrary and contrary to law because it disregards available science and misconstrues applicable legal requirements. These flaws are described in more detail below. A number of the identified flaws are set out more than once because they are is relevant to more than one issue in this protest. Any duplication is therefore intentional and each protest point should be treated separately where and as made.

I. THE FEIS/PRMP ARE BASED ON AN UNSTATED AND UNEXPLAINED "PURPOSE AND NEED"

The purpose and need for the 2016 WOPR is described as follows:

> The BLM conducted plan evaluations in accordance with its planning regulations, which require that RMPs "shall be revised as necessary based on monitoring and evaluation findings, new data, new or revised policy and changes in circumstances affecting the entire plan or major portions of the plan" (43 CFR 1610.5-6). These evaluations concluded that "[a] plan revision is needed to address the changed circumstances and new information that has led to a substantial, long-term departure from the timber management outcomes predicted

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[1] *Seattle Audubon Soc'y v. Evans*, 771 F. Supp. 1081, 1089-90 (W.D. Wash.), *aff'd*, 952 F.2d 297 (9th Cir. 1991).
[2] *See, e.g., Portland Audubon Soc'y v. Lujan*, 865 F. Supp. 1464 (D. Or. 1994); *Lane County Audubon Soc'y v. Jamison*, 958 F.2d 290 (9th Cir. 1992).
[3] Northwest Forest Plan Record of Decision at 3.
[4] *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. 1291, 1303 (W.D. Wash. 1994), *aff'd*, 80 F.3d 1401 (9th Cir. 1996); FEMAT Report at I-1, II-36 to-37, ch. V.
[5] *Pac. Rivers Council v. Shepard*, No. 03:11-CV-00442-HU, 2011 WL 7562961 (D. Or. Sept. 29, 2011), *report and recommendation adopted as modified*, No. 03:11-CV-442-HU, 2012 WL 950032 (D. Or. Mar. 20, 2012); *Pac. Rivers Council v. Shepard*, No. 12-35570 (9th Cir. March 1, 2013) (opinion and order dismissing appeal by timber Intervenors for lack of jurisdiction and upholding district court decision in its entirety).

> under the 1995 RMPs." These evaluations also concluded that the management direction for most of the other resource management programs need to be modified or updated because of changed circumstances and new information. These evaluations concluded that changes are particularly indicated for the fisheries, aquatics, recreation, off-highway vehicle, and fire and fuels programs.
>
> Moreover, the BLM needs to revise existing plans to replace the 1995 RMPs' land use allocations and management direction because of new scientific information and policies related to the northern spotted owl. Since the 1995 RMPs were approved, there have been analyses on the effects of land management on northern spotted owl habitat, demographic studies, and analyses of the effects of barred owls on northern spotted owls. In addition, since that time, new policies for northern spotted owls have been put in place, including a revised recovery plan and a new designation of critical habitat.[6]

The FEIS/PRMP goes on to note that this purpose and need includes, *inter alia*, providing a sustained yield of timber, conservation and recovery of listed species, providing clean water, restoring fire-adapted ecosystems, providing for recreational opportunities, and coordinating management of lands surrounding the Coquille Forest.[7] While these goals are laudable and may even describe a permissible purpose and need, the resulting alternatives in the FEIS do not comport with these objectives because each alternative inexplicably includes components that would threaten wildlife, watershed, and recreational values in an attempt to meet an unstated and unanalyzed "purpose and need" – to increase timber production.

BLM has steadfastly maintained that the NWFP has failed to produce "enough" timber from O&C lands without ever describing the legal basis for determining what is or is not "enough" in light the requirements of the O&C Act and other applicable laws. In fact, timber production in recent years has been relatively constant, albeit lower than historic levels predating the implementation of the NWFP. Even if the current level of timber production is not sustainable under the current RMPs as amended as BLM asserts, it has failed to identify any legal standard or other requirement that would make a lower – but sustainable level of timber production – improper. Moreover, all of the "new information" BLM references throughout the FEIS/PRMP shows either that the Northwest Forest Plan is working to achieve the remaining stated "needs" for the 2016 WOPR or that accomplishing these needs requires *additional* measures to protect wildlife and other resources that may affect the amount of land on which logging may occur in the planning area and timber production. *See infra*. The available science also shows that implementation of the NWFP has provided better protection for more species, that watersheds are in better condition than they were prior to the implementation of the NFP, that water is cleaner and cooler with the ACS, riparian reserves, and a program of watershed restoration than without the NFP, that more people recreate on BLM lands than use them for

[6] FEIS/PRMP at 5 (citation omitted).

[7] FEIS/PRMP at 6-10.

timber harvest, and that recreationalists contribute more money to local economies than does timber harvest.[8]

In short, given the available information regarding the stated purpose and need for the 2016 WOPR, and the governing legal standards, BLM never explains its apparent assumption that the BLM lands in the planning area are not producing "enough" timber on a sustained yield basis, or why a lower level of sustained timber production is not reasonable and would not, in fact, better meet the agency's stated purpose and need with less risk to the resources and values BLM identifies as integral to meeting the purpose and need for action. It is apparent from the FEIS/PRMP itself that alternative courses of action that produce a lower sustained yield of timber are reasonable and do meet the agency's stated purpose and need because the FEIS includes such alternatives. What the agency has failed to do is identify or explain why those alternatives that produce a lower sustained yield of timber are not acceptable in light of the purpose and need the agency has identified and the applicable law. Instead, the FEIS/PRMP appears to be built on an unstated but overriding need to produce more timber from BLM lands on a sustained yield basis. This unstated and unanalyzed need is impermissible and, as explained below, is not required by any of the laws that govern these lands.

II. THE O&C ACT REQUIRES BLM TO ACHIEVE MULTIPLE CO-EQUAL GOALS

As noted above, it appears that an unstated and unanalyzed purpose and need for the 2016 WOPR is to provide more timber, on a sustained yield basis, than the lands covered by the plan have produced in recent years or purportedly can produce under current plan direction. However, the O&C Act does not require maximum timber production from every acre all the time, or for that matter, from any particular acre at any time. Indeed, other than calling for a sustained yield of timber from such O&C lands as may be classified as "timberlands," the O&C Act does not specify the sale of *any* particular amount of timber from the O&C lands once the BLM has identified lands suitable for forest production.

A. The O&C Act

The O&C Act governs railroad grant lands that revested in the federal government due to the railroad company's breach of its statutory duties. In the Act, Congress sought to put an end to wasteful and destructive logging practices that clearcut large forest areas for short-term gains without safeguarding the forests and other resources. The Act thus instituted a conservation ethic, marking the first federal statute to impose sustain-yield constraints on timber cutting:

> [the O&C lands] shall be managed . . . for permanent forest production, and the timber thereon shall be sold, cut and removed in conformity with the principal

[8] While "restoring fire-adapted ecosystems" is part of the stated purpose and need, BLM acknowledges that it has little ability to do so on its lands due to the checkerboard pattern of federal and nonfederal ownership on the O&C lands. FEIS/PRMP at 255, 264 .

> [sic] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities.[9]

As the FEIS/PRMP acknowledge, numerous statutes other than the O&C Act also establish legal duties that BLM must meet in managing the O&C lands.[10] While the timber industry and others have contended that BLM must manage the O&C lands under a timber-first mandate, BLM has long recognized that it must manage the O&C lands to meet multiple co-equal and complementary statutory requirements under the O&C Act as well as other laws. Indeed, under the Northwest Forest Plan, BLM has been managing (or at least purporting to manage) these lands to comply with all applicable laws, including the O&C Act.

The *Headwaters* case on which BLM appears to rely to assert a "timber dominance" requirement – one that cannot override the requirements of other laws even if it exists (which it does not), involved a land management plan with no-cut reserves, and the facts underlying this case arose before the spotted owl, marbled murrelet, and Coho salmon became listed under the Endangered Species Act. The dissent in *Headwaters* explained why a different result should prevail after these listings. And the courts have already ruled that the Northwest Forest Plan does not violate the O&C Act. BLM is thus choosing to re-do its management plans not only to address an unstated and unanalyzed purpose and need but also to address one that is altogether illusory – producing "enough" timber, or at least "more" timber, from the O&C lands on a sustained yield basis than has been produced recently or, according to BLM, could be produced on a sustained yield basis under current management direction.

B. Safeguards Drawn From the O&C Act

Under the O&C Act, O&C lands classified as "timberlands" "shall be managed . . . for permanent forest production," subject to constraints in the O&C Act itself and other laws.[11] Permanent forest production, of course, is not synonymous with commercial logging. A 1979 Interior Solicitor memorandum clarified that forest production need not be for commercial use. That is but one of many types of "forest production." Such "forest production" also could be to protect watersheds, stream flows, or recreation.[12]

Forest production under the O&C Act also is not an end in itself but appropriate only to the extent that it promotes stability of local communities consistent with the other purposes of the Act. In the O&C Act, Congress sought to curtail the type of boom and bust logging frenzies that had generated economic instability. Congress decidedly did not support maximizing timber

[9] 43 U.S.C. § 1181a-1181j.
[10] These comments address only management of the O&C lands, but the RMP revisions pertain to all BLM lands, including vast tracts of public domain lands that are fully subject to all land management and environmental laws.
[11] 43 U.S.C. § 1181a.

[12] Interior Solicitor Mem. (Aug. 27, 1979).

production for short-term economic gain. Instead, it sought to institute long-term sustainability from timberlands. To achieve these goals, BLM must consider alternatives that broadly promote community stability, not just those that would provide "more" commercial timber production.

Indeed, the FEIS/PRMP indicates that an alternative that simply increases timber harvest would be inconsistent with the O&C Act, which requires timber harvest "...contribut[e] to the economic stability of local communities and industries."[13] The FEIS/PRMP further states that "Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability to local economies, based on past business cycles."[14] Introducing greater instability to local economies is inconsistent with the O&C Act.

Finally, the O&C Act explicitly lays out other co-equal requirements for management of the O&C lands. Specifically, the lands must be managed for the purpose of "protecting watersheds, regulating stream flow...and providing recreational facilities."[15] Given the grammar and structure of the language of the O&C Act, these requirements are on a par with forest production. Thus the mandate to protect watersheds and stream flow readily supports establishing safeguards like those embodied in the Aquatic Conservation Strategy ("ACS") of the Northwest Forest Plan. Similarly, BLM must manage the O&C lands to protect high-quality recreation opportunities. The Interior Solicitor has advised that this mandate "is broad enough to include such things as scenic highways or scenic rivers which are identified as such through the Bureau's planning process."[16] With respect to a wild and scenic river partially on O&C lands, the Interior Solicitor counseled that logging could occur in areas important for recreation only if it would not impair recreational or aesthetic qualities.[17]

C. Safeguards Drawn From Other Laws

BLM also must comply with other laws unless they expressly are subject to the O&C Act and there is an unavoidable conflict. In the absence of an express exception or direct and irreconcilable conflict, the BLM must reconcile its overlapping statutory duties and comply with all such requirements.

Initially, BLM and the courts focused on the role of the Federal Land Policy and Management Act ("FLPMA"), enacted decades after the O&C Act. In *Headwaters v. BLM*,[18] the Ninth Circuit held that BLM did not err on the facts of that case in construing the O&C Act to make timber production a dominant or primary use of these lands. Headwaters had challenged a

[13] 43 U.S.C. 1181a.
[14] FEIS/PRMP at 702 [DEIS at 568]. Of course, this statement says nothing about alternatives that produce a sustainable timber supply at less than current levels. Such alternatives would be both consistent with the requirements of the O&C Act and better promote long-term community stability.
[15] 43 U.S.C. § 1181a.
[16] Interior Solicitor Mem. at 10. (May 14, 1981).
[17] Interior Solicitor Mem. at 1-2 (Oct. 4, 1978).
[18] 914 F.2d 1174, 1183-84 (9th Cir. 1990),

particular timber sale and argued that BLM erroneously emphasized timber production over conservation of wildlife habitat and old-growth forests. The majority held that BLM appropriately tiered its environmental assessment for the timber sale to a programmatic environmental impact statement addressing wildlife and old-growth habitat, and it rejected Headwaters' challenge to BLM's multiple use determination, which emphasized timber production *for the lands at issue*. As later cases confirm, the result is often far different where courts address BLM's duties under the full range of statutes to which it is subject and across the lands it manages. In other words, the holding in *Headwaters* is quite narrow and does not establish a general "timber dominance" requirement across BLM's statutory responsibilities and lands.

FLPMA has also been construed to impact BLM's wilderness review obligations for O&C lands. Under FLPMA, BLM has an obligation to conduct a wilderness study review of roadless areas that have 5000 acres or more and wilderness characteristics.[19] This review should have occurred within 15 years of FLPMA's passage, i.e., by the end of 1991. During a wilderness study review, BLM must manage the lands in a manner that does not impair their suitability for preservation as wilderness.[20] This has been construed to prohibit roadbuilding and logging in most instances.

FLPMA has a savings clause, which provides that the O&C Act prevails "in the event of conflict with or inconsistency between [FLPMA and the O&C Act] insofar as they relate to management of timber resources, and disposition of revenues from lands and resources . . ."[21] An Interior Department Solicitor's memorandum indicates that there is scant legislative history pertaining to the savings clause, but there was some indication that the Department sought to assuage concerns raised by the Oregon delegation that the funding formula and management of O&C lands would be affected by FLPMA.[22] The Solicitor's memorandum reconciles the O&C Act with FLPMA's wilderness study provision as follows: O&C lands that BLM concludes are suitable for timber production are ineligible for wilderness study, while O&C lands that are not suitable can be considered for wilderness. Thus O&C lands have been included in some wilderness study areas and designated wilderness areas, such as the Wild Rogue Wilderness and Table Rock Wilderness. Moreover, BLM could properly determine that designating even those O&C lands that might otherwise be suitable for timber production as wilderness would be the most effective way to meet its legal obligations to protect species and ecological functions.[23]

After *Headwaters*, the operating principle the courts have articulated for managing O&C lands under the O&C Act, FLPMA and other laws has become one of meeting multiple legal responsibilities. BLM must meet all of its statutory obligations, many of which call for

[19] 43 U.S.C. § 1782(a).
[20] *Id*. § 1782(c).
[21] 43 U.S.C. § 1701 note.
[22] Interior Solicitor Mem. at 9 (Sept. 5, 1978).
[23] Since the O&C Act supersedes FLPMA only where the two conflict, BLM still has an obligation to designate Areas of Critical Environmental Concern particularly where special management is needed to protect ecological values that are consistent with the O&C Act's goals. *See* 43 U.C.S. § 1702.

environmental safeguards even where such safeguards lead the agency to classify lands as not suitable for timber production. Indeed, this basic structure underlies the 2016 WOPR. The critical point is that the O&C Act does not tell the BLM which lands, or how much land, to identify as suitable for timber production when determining how to comply with all of its statutory obligations. It only says that the agency should provide a sustained yield of timber from those lands that are so classified. It does not set either a minimum land base or a minimum timber production requirement and BLM has identified none either as a matter of law or fact.

In *Portland Audubon Society v. Lujan,*[24] the Ninth Circuit found no unavoidable conflict between an injunction stopping old-growth logging pending compliance with the National Environmental Policy Act, and the O&C Act, even though the Act's timber targets (stated as a minimums) could not be met under the injunction. BLM and the O&C counties had argued that "the district court erred in issuing an injunction which prevents the BLM from selling a minimum of 500 million board feet of timber per year as directed by the" O&C Act.[25] The court rejected this argument, stating:

> We find that the plain language of the Act supports the district court's conclusion that the Act has not deprived the BLM of all discretion with regard to either the volume requirements of the Act or the management of the lands entrusted to its care. Because there does not appear to be a clear and unavoidable conflict between statutory directives, we cannot allow the Secretary to 'utilize an excessively narrow construction of its existing statutory authorizations to avoid compliance [with NEPA].'"[26]

Under this ruling, BLM must comply with NEPA, the ESA, and other environmental laws in its management of O&C lands. Surprisingly, BLM asserts that one of its principal responsibilities under one of these laws, species recovery under the ESA, is "advisory" and that its only duties under this statute arise from its section 7(a)(2) duty to avoid actions that would jeopardize listed species or destroy or adversely modified designated critical habitat.[27] This understanding of the ESA is incorrect. Even though the revised spotted owl recovery plan may not be directly enforceable against the BLM through a citizens suit under the ESA, the BLM has broad and important duties under ESA section 7(a)(1), including the duty to "carry[] out programs for the conservation" of listed species.[28] The ESA, of course, also defines the term "conservation" as bringing a species to the point where the protections of the Act are no longer required, i.e., the

[24] 998 F.2d 705 (9th Cir. 1993).
[25] *Id*. at 709. BLM itself has now apparently recognized that the 500 million board food "requirement" it cited in *Portland Audubon* is based on an erroneous interpretation of the O&C Act. *See* FEIS/PRMP Appendix W Response to Comments at page 1855 ("The O&C Act does not establish a minimum harvest level.").
[26] *Id*. at 709.
[27] FEIS/PRMP at 1986-87 ("The revised recovery plan is advisory.").
[28] 16 U.S.C. sec. 1536(a)(1).

species is recovered.[29] The BLM's statement that an ESA recovery plan is merely "advisory" is, in both incorrect and "remarkable."[30]

More recent court rulings have held that in fact, the BLM must comply with many other laws, in addition to the O&C Act, which may have the effect of reducing the amount of timber that can be produced from the O&C lands on a sustained yield basis.[31] Consequently, it is plain that BLM has the legal authority – and in fact a duty – to classify lands as not suitable for timber production and to reduce timber harvests as necessary in order to comply with the provisions of other laws, as well as the multiple mandates of the O&C Act.

D. The Northwest Forest Plan Complies with the O&C Act and Other Environmental Laws

In the Northwest Forest Plan, the agencies understood that other environmental laws affect implementation of the O&C Act in the absence of a direct conflict, and that prudent management to avoid such conflicts is necessary. For example, the O&C Act "does not limit the Secretary's ability to take steps now that would avoid future listings and additional disruptions."[32] Indeed, in *Seattle Audubon Society v. Lyons*,[33] the court rejected the contention that the Northwest Forest Plan violated the O&C Act, stating that BLM must fulfill its conservation duties under other environmental statutes in managing the O&C lands. The court also rejected the contention that the agency need not comply with the NEPA or the ESA because it has no power under its enabling statute to modify its management activities based on the other environmental statutes.[34] The court also noted that the *Headwaters* case itself approved a BLM management plan that allocated over 50% of the area at issue to non-timber uses and that the decision dealt with the O&C Act alone, not BLM's duty to comply with other statutes. Further, as noted above, section 7(a)(1) of the Endangered Species Act requires BLM to utilize its authorities to carry out programs to conserve threatened and endangered species.[35] While BLM says in some places that this and other legal requirements are a mandate to protect at risk species and minimize the risk of future species listings, in other places it offers contradictory statements and the PRMP does not comply with the agency's multiple legal duties.

While NEPA and the ESA are two statutes that impose both procedural and substantive mandates on BLM's management of O&C lands, the Interior Solicitor has recognized that numerous statutes similarly constrain BLM's management of O&C lands. The Wild and Scenic Rivers Act is one such statute, and in fact several designated wild and scenic rivers include O&C

[29] 16 U.S.C. sec. 1532(3).
[30] *Seattle Audubon Soc'y v. Evans*, 771 F. Supp. at 1089-90.
[31] *Swanson Grp. Mfg. LLC v. Jewell*, No. 13-5268, 2015 WL 3634645 (D.C. Cir. June 12, 2015).
[32] NWFP ROD at 50.
[33] 871 F. Supp. 1291 (W.D. Wash. 1994) (appeal history omitted),
[34] *Id*. at 1314.
[35] *Id*. at 1311, 1314. In fact, the court found that the BLM could not, given the current conditions of the forests, meet its under the ESA and other environmental laws "*without* planning on an ecosystem basis" in coordination with other federal land management agencies. *Id*. at 1311 (emphasis added).

lands. BLM must also manage the lands to safeguard species listed under state endangered species acts, to provide sufficient habitat to conserve and rehabilitate fish, wildlife, and game populations, to meet water quality standards established under the Clean Water Act, and to impose measures to protect wetlands, including by prohibiting logging in wetlands areas, where necessary.[36]

In short, there is no legal basis to emphasize timber production over other statutory mandates in the statement of purpose and need for the 2016 WOPR or elsewhere because BLM must and can comply with all of its legal duties – and it has been attempting to do just that under the Northwest Forest Plan for the last 20 years. The implication that the 2016 WOPR must somehow address a perceived shortfall in sustained yield timber production has no basis in the law.

E. Providing a Sustained Yield of Timber Does Not Specify or Dictate Any Particular Level of Sustained Yield

BLM cites as its first purpose of the 2016 WOPR providing a "sustained yield of timber."[37] The O&C Act says that this "sustained yield" is "for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities."[38] As noted above, these are co-equal purposes that do not specify any particular level of sustained yield of timber, nor could they if all of the purposes are to be met. Yet implicit in the FEIS/PRMP is the premise that some levels of sustained yield timber production have a stronger legal footing than others even if those levels of sustained yield also place other protected resources (and purposes and needs for a plan revision) at greater risk. There is simply no basis for this unstated premise nor is one offered or analyzed. What is missing from the FEIS/PRMP is any explanation or accounting for why the BLM apparently intends to choose the particular level of sustained yield timber production described for the PRMP over some other lower level in light of the acknowledged risks this level of timber production poses to other resources. Since neither the law nor any analysis of the facts by the agency requires or explains the specific level of sustained yield timber production proposed in the PRMP, the decision to select a particular outcome is arbitrary and contrary to law.[39]

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[36] *See* Interior Solicitor Mem. (May 14, 1981).

[37] FEIS/PRMP at 5-6

[38] 43 U.S.C. 1181a.

[39] The analysis in the FEIS/PRMP also shows that regeneration is not needed to restore early seral-habitat, because early seral habitat is already over-abundant and likely to increase in the future as a result of climate change. Likewise, regeneration harvest is not needed for "community stability" because the FEIS/PRMP recognizes that the timber industry is inherently volatile and has been for decades. Increasing regeneration harvest will actually reduce not increase community stability. And, regeneration harvest is not needed for fire hazard reduction, because the analysis shows that young forests resulting from such logging are more hazardous than mature forests.

III. THE FEIS/PRMP FAILS TO DISCLOSE THE EFFECTS OF THE PROPOSED ACTION ON THE NORTHWEST FOREST PLAN

The 1994 Northwest Forest Plan amended the planning documents of 19 national forests and seven BLM districts, and set standards and guidelines for managing these lands. The timber industry challenged the agencies' authority to adopt an ecosystem plan that covered lands administered by both the Forest Service and BLM. The courts held, however, that both agencies' planning statutes required an integrated, scientific approach, that both agencies had to comply with NEPA's mandate to consider ecosystem effects, and that both agencies had to comply with the Endangered Species Act, among other laws. In fact, the court observed that "[g]iven the current condition of the forests, there is no way the agencies could comply with the environmental laws *without* planning on an ecosystem basis."[40]

At bottom, the validity of the Northwest Forest Plan (and its ecological effectiveness) depends on its application to Forest Service, BLM, and other federal lands within the range of the Northern Spotted Owl. The Plan sets "coordinated management direction for the lands administered by the Forest Service and BLM within the range of the spotted owl [that will also] protect and enhance late successional and old-growth forest ecosystems."[41] Two key assumptions behind the biological analysis of the Northwest Forest Plan were that (1) "[r]iparian and Late-Successional Reserves (LSRs) will retain reserve status and will not be available for timber production other than as provided in Alternative 9" and (2) "[a]lternative 9 applies to Forest Service and BLM lands; all future actions on these lands would be consistent with Alternative 9, as adopted in the Record-of-Decision (ROD)."[42] The PRMP described in the FEIS is contrary to both of these assumptions as explained in subsequent sections of this protest. *See infra*.

Under NEPA, federal agencies are required to examine in an EIS the cumulative impacts of proposed actions – that is, those impacts that result from the incremental impact of the action when added to other the past, present, and reasonably foreseeable future actions.[43] By considering action alternatives that would change BLM's land management, the agency is considering pulling out of the multi-agency Northwest Forest Plan. BLM cannot do this without assessing and disclosing how its actions will combine with those of other federal agencies to affect both its own actions and continued implementation of the Northwest Forest Plan. The

[40] *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. 1291, 1311 (W.D. Wash. 1994). The court reached a similar conclusion specifically with respect to aquatic protection: "The effectiveness of the [Aquatic Conservation Strategy] is still subject to debate among scientists. If the plan as implemented is to remain lawful, the monitoring, watershed analysis, and mitigating steps called for by the ROD will have to be faithfully carried out, and adjustments made if necessary. *Id*. at 1322.
[41] FWS Northwest Forest Plan Biological Opinion at 2 (Feb. 10, 1994).
[42] *Id.* at 4.
[43] 40 C.F.R. § 1508.7.

FEIS/PRMP does not include such an analysis or provide a rational or legal explanation of why one is not required.[44]

For example, The Northwest Forest Plan prohibits logging of stands 80 years or older in the Late Successional Reserves for several reasons: (a) such stands are beginning to acquire late successional characteristics and provide valuable habitat for spotted owls and other wildlife; (b) there is a lack of evidence to support the hypothesis that logging in stands >80 years old is beneficial to habitat development; and (c) logging will likely do more harm than good.

This reasoning is articulated in several scientific reports, including the 1990 Interagency Scientific Committee (ISC) Report, the 1993 SAT Report, and various reports to Congress where the scientists were being asked to explain to a skeptical committee in Congress why logging old forests could not be compatible with conserving late-successional forest ecosystems. The ISC report said "no consensus exists about whether any silvicultural systems would produce the desired results. The ability to harvest timber in currently suitable owl habitat and have that habitat remain suitable has not been clearly demonstrated."[45]

The SAT noted that "considerable additional research is likely required" before we will know whether silviculture can be compatible with spotted owls, and while the spotted owl is relatively well studied, the risks and uncertainty are even more pronounced for the hundreds of other species associated with old-growth.[46] It should also be recognized that President Clinton's Mission Statement directed the FEMAT team to ensure that "tests of silviculture should be judged in an ecosystem context and not solely on the basis of single species or several species response."[47]

The 1993 Report of the Scientific Analysis Team (SAT) specifically highlighted the risks associated with logging in suitable owl habitat, saying "intentions to selectively cut forest stands

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[44] Similarly, pursuant to the consultation provisions of the Endangered Species Act, BLM, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service must address the full effects of this action, which includes the effects of BLM's dismantling of the Northwest Forest Plan on listed species. *See Connor v. Burford*, 848 F.2d 1441, 1453 (9th Cir. 1998) (agency must "analyze the effect of the of the *entire* agency action" and render a "comprehensive biological opinion") (emphasis in original); *Greenpeace v. National Marine Fisheries Serv*., 80 F. Supp. 2d 1137, 1147-50 (W.D. Wash. 2000) (finding biological opinion invalid for failing to assess full scope of individual and cumulative fishing allowed under fishery management plan); *see also PCFFA v. NMFS*, No. 04-1299-RSM, Report and Recommendation, slip op. at 22 (W.D. Wash. 2006) (later site-specific consultations that do not address entire Northwest Forest Plan cannot adequately address cumulative effects).

[45] Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, and J. Verner. 1990. A Conservation Strategy for the Northern Spotted Owl. A report by the Interagency Scientific Committee to address the conservation of the [45]northern spotted owl. USDA, Forest Service, and U. S. Department of the Interior, Fish and Wildlife Service, Bureau of Land Management, and National Park Service. Portland, OR (*herein* ISC Report), 1990, p 104.

[46] Thomas, JW, Raphael, MG, Anthony, RG, Forsman ED, Gunderson, AG, Holthausen, RS, Marcot, BG, Reeves, GH, Sedell, JR, and DM Solis. 1993. Viability Assessments and Management Considerations for Species Associated with Late-Successional Old-Growth Forests of the Pacific Northwest. The Report of the Scientific Analysis Team (*herein* SAT Report), 1993, p 147.

[47] FEMAT Report, p iii.

to create conditions favorable for spotted owls, represents increased risks to the viability of the spotted owl."[48] The Scientific Analysis Team said there are several factors that support this conclusion and affirm the Interagency Scientific Committee's decision to exclude logging in old growth reserves and rely on natural processes to maintain and restore habitat:

a. "Lacking experience with selective cutting designed to create spotted owl habitat, such practices must be considered as untested hypotheses requiring testing to determine their likelihood of success. ... Given the uncertainty of achieving such expectations, it is likely that some silvicultural treatments, which have been characterized as largely experimental, may well have an opposite effect from that expected. Consequently, such treatments may hinder the development of suitable habitat or they may only partially succeed, resulting in development of marginal habitat that may not fully provide for the needs of spotted owls. Results which fall short of the expected conditions could occur because of delay or failure to regenerate stands that have been cut, increased levels of windthrow of remaining trees, mechanical damage during logging to trees remaining in the logging unit, the spread of root rot and other diseases. Increased risk of wildfires associated with logging operations that increase fuels and usually employ broadcast burning to reduce the fuels also increase the risk of not attaining expected results. Such events may spread to areas adjacent to stands that are logged, thereby affecting even more acreage than those acres directly treated." [SAT p 147-148] The SAT indicates that these comments apply equally to density management and patch cutting, both of which are being promoted as tools to enhance owl habitat. The SAT also cited concerns about the effect of logging on snags and down woody debris which are essential features of owl habitat.

b. "Planning produces a description of desired future conditions [and] culminates in a final plan for a project which, for timber sales, involves legal contracts obligating the purchaser and the seller to specific provisions. … Our experience is that commonly not all provisions of the plan are thoroughly incorporated into such contracts, nor are all contract provisions thoroughly administered to ensure compliance." [SAT p 148-149].

c. "There are also probabilities associated with how well monitoring will identify 'trigger points' that indicate a management plan may need modification. The more complex the plan (i.e., the more variables there are to monitor) the less likely the monitoring plan will successfully detect problems. Manipulation of forest stands to accelerate development of spotted owl habitat on a landscape scale, as prescribed in the Bureau of Land Management Preferred Alternative, is an extremely complex issue involving a myriad of variables over a very long timeframe. Development of a monitoring plan

[48] SAT Report p 145.

intensive enough to isolate the causes of observed variations for wide-scale implementation of the Bureau of Land Management Preferred Alternative seems unlikely to us. … [I]nadequate monitoring will increase, perhaps dramatically, the risk of failure of a plan that relies heavily on adaptive management." [SAT p 149].

d. "A basic requirement for a viable adaptive management strategy is the existence of resources necessary to make the required adjustments. Adaptive management can only be expected to reduce risk if options to adjust management to fit new circumstances are not eliminated. Adaptive management, therefore, can be considered a means to reduce risk associated with a Resource Management Plan commensurate with the options for adjustment which remain during the time the plan is in effect." [SAT p 149-150] In other words, silvicultural manipulation of mature forests has long-term consequences and is likely to foreclose some future options in those stands, thus reducing the utility of adaptive management. A prime example is the fact that logging "captures mortality," yet mortality is an essential feature of old-growth habitat used by both spotted owls and their prey.

e. SAT then noted the cumulative effects of all these uncertainties: "The combined risks associated with treatment of spotted owl habitat or stands expected to develop into suitable habitat for spotted owls, as discussed above, will likely result in situations where either habitat development is inhibited or only marginal habitat for spotted owls is developed. The exact frequency of these partial successes or failures is unknown. Given the likely cumulative relationship among the risks for each factor, it appears to us that the overall risk of not meeting habitat objectives is high. … Members of the Interagency Scientific Committee indicated that, because a plan (the Interagency Scientific Committee's Strategy) was put forth which proposes to reduce the population of a threatened species by as much as 50 percent, providing the survivors with only marginal habitat would be extremely risky and certainly in their minds not 'scientifically credible' (USDA 1991:45)." [SAT p 151].

f. The SAT concluded, "The transition period (1-50 years) between implementation of the Interagency Scientific Committee's Strategy and achievement of an equilibrium of habitat and spotted owls is a critical consideration. … Given the existing risks that face owl populations and the sensitivity of the transition period, the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted habitat gains. We further conclude that, although research and monitoring studies are presently being initiated, no significant new data exist which suggest that the degree of certainty that is expressed in the Bureau of Land Management Draft Resource Management Plans for developing owl habitat

> silvicultural treatments is justified. Therefore, it is our opinion that the course prescribed in the Interagency Scientific Committee's Strategy, pertaining to timber harvest in Habitat Conservation Areas, remains the most likely course to result in superior habitat conditions within reserves (i.e., Old-Growth Emphasis Areas). The approach prescribed by the Interagency Scientific Committee's Strategy preserves options for adjustments in the course of management under a philosophy of adaptive management." [SAT p 151-152].

The authors of the Northwest Forest Plan took all this into account and determined that 80 years is a useful place to draw the line between younger forests that are likely to benefit from careful thinning and older forests that are likely to experience net negative consequences.[49] There is no new science to change that conclusion. In fact, new information developed since 1994 shows that dead wood is probably more valuable than previously thought. It is important for a wide variety of ecological functions, not least of which is providing complex habitat to support owl prey species. Thinning stands over 80 years will remove many large trees and prevent them from ever becoming snags and dead wood. The long-term loss of recruitment of dead wood habitat in older stands is a very strong argument against logging in stands over 80 years old.[50]

Because the unraveling of the Northwest Forest Plan as a consequence of the FEIS/PRMP is a foreseeable effect of the proposed action, the environmental and cumulative impacts of losing or changing the Northwest Forest Plan on both the BLM and other land owners (federal and non-federal) must be explicitly and fully addressed. As they were not addressed, the FEIS violates the National Environmental Policy Act.[51]

IV. BLM CANNOT MAKE RADICAL DEPARTURES FROM THE NWFP WITHOUT A RATIONAL EXPLANATION

A recent *en banc* opinion from the 9th Circuit affirms the principle that BLM cannot radically depart from the NWFP without adequate explanation of its changed position. *Organized Village of Kake v. USDA*, 795 F.3d 956 (9th Cir. 2015) (*en banc*).

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[49] *See* 1993 SAT Report pp 146-152. AND February 1991 Questions and Answers on A Conservation Strategy for the Northern Spotted Owl (prepared in response to written questions from the Senate Energy and Natural Resources Committee to the Interagency Scientific Committee on the May 1990 ISC Report. AND Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

[50] USDA Forest Service. 2007. Curran Junetta Thin Environmental Assessment. Cottage Grove Ranger District, Umpqua National Forest. June 2007. http://www.fs.fed.us/r6/umpqua/projects/projectdocs/curran-junetta-thin/index.shtml This EA revealed that heavy thinning in young stands would delay attainment of objectives for recruitment of dead wood for 6 decades or more.

[51] By attempting to back out of the Northwest Forest Plan, BLM also is violating its affirmative conservation duties under ESA § 7(a)(1) as discussed elsewhere in this protest. In addition, consultation under ESA § 7(a)(2) must look at effects of the agency action in combination with other on-going federal actions and the dismantling of the Northwest Forest Plan.

In the FEIS/PRMP, BLM proposes significant changes to its implementation of the Northwest Forest Plan, including but not limited to:

- eliminating the Northwest Forest Plan's survey and manage program,
- dramatic narrowing of the purpose of and the width of riparian reserves,
- increasing active management in the reserves, and
- reducing the retention requirements in the timber management areas.

See infra (describing these and other significant departures in greater detail). The NWFP was adopted with the most compelling scientific rationale of any RMP anywhere, ever.

The purposes of the survey and manage program were justified based on "additional species analysis" contained in the 1994 FSEIS for the Northwest Forest Plan and further explained in Appendix J2 of that document. Based on court rulings, the NWFP properly adopted an ecosystem management approach that attempted to protect species before they become threatened or endangered. While BLM has adopted as one of its purposes and needs for the PRMP avoiding future ESA listings, and has acknowledged its own duty to protect sensitive species (responsibilities that have not changed since adoption of the NWFP), BLM is now trying to narrow the purpose and need for this RMP revision by asserting that its wildlife conservation mandate is somehow narrower than it was in 1994. This is incorrect. Wildlife conservation, including both listed and non-listed species, is required both by the ESA and FLPMA, as well as the multiple purposes of the O&C Act (e.g., "permanent forest production," "regulating stream flow," and "recreation facilities"). BLM has tried three times (unsuccessfully) to eliminate the survey and manage program of the NWFP (2004 EIS/ROD, 2007 EIS/ROD and 2008 WOPR). Twice the courts have rejected the agencies' efforts because the survey and manage program was considered integral to BLM's compliance with its conservation duties. BLM's claim in the FEIS that the sole basis for application of the survey and manage protocols to its lands was "extra-territorial" application of the Forest Service "viability regulation" is both wishful thinking and incorrect. BLM has complementary conservation duties to protect at risk old-growth dependent and associated species.

Likewise, the broad purposes of the riparian reserves were explained in the 1994 FSEIS. These purposes include both terrestrial and aquatic conservation objectives, providing extra assurance that at-risk and ESA-listed fish would be conserved, mitigating for cumulative impacts, maintaining microclimate and wood input for amphibians and other wildlife that live near but not in streams. The agencies wrote an EIS to amend the ACS in 2008 but withdrew it in the face of litigation. Now BLM proposes an even more radical revision of the riparian reserves and its objectives and standards & guidelines. BLM proposes to allow significant logging in reserves with an assumption that logging is compatible with late successional habitat and other objectives. This approach was considered and rejected in the Northwest Forest Plan and BLM

has not explained how or why they arrived at a contradictory conclusion with this latest iteration.[52]

As with the proposed decision to abandon the NWFP's survey and manage requirements, the BLM's justification for abandoning the standards and guidelines of the ACS is grounded in the assertion that application of the ACS to BLM lands was based on "extra-territorial" application of the Forest Service "viability regulation." In both cases, this is incorrect and BLM fails to offer a legal basis for concluding that the ACS from the NWFP is not still required in order to meet all of its conservation duties. In addition, as explained below, it also fails to offer a rational explanation for why the measures of the FEIS/PRMP are equivalent to or better than those of the NWFP for survey and manage species and species protected by the ACS. As in *Organized Village of Kake*, the BLM has changed direction without providing a legal or factual basis for doing so.

V. RANGE OF ALTERNATIVES

In preparing an EIS, NEPA requires the agency to "study, develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."[53] The regulations implementing NEPA explain that alternatives to the agency's proposed action are "the heart of the environmental impact statement."[54] The "touchstone" of the alternatives analysis is "whether [the] selection and discussion of alternatives fosters informed decision-making and informed public participation."[55] "The existence of a viable but unexamined alternative renders an environmental impact statement inadequate."[56] While it is also true that the range of reasonable alternatives to be considered in an environmental impact statement depends on the purpose and need for the project,[57] an agency's discretion to determine purpose and need is not unfettered.

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[52] *See* Heiken, Doug (2009). The Case for Protecting Both Old Growth and Mature Forests, Version 1.8. Oregon Wild. http://dl.dropbox.com/u/47741/Mature%20Forests%2C%20Heiken%2C%20v%201.8.pdf (see especially the following sections that explain why the authors of the NWFP adopted a mostly hand-offs approach in reserves, except for dense young stands:

- Logging mature forests will impair development of important features of old-growth forests, especially snags and dead wood. p 29
- In all forest types, recognize that logging has trade-offs. p 34
- In moist provinces, mature forests just need time, not logging. p 35
- In dry provinces, fire hazard is over-stated. Logging mature trees will just make things worse. p 39")

[53] 42 U.S.C. § 102(2)(E).

[54] 40 C.F.R. § 1502.14; *see also* 42 U.S.C. § 4332(2)(E); 40 C.F.R. 1507.2(d), 1508.9(b).

[55] *Westlands Water Dist. v. U.S. Dep't of Interior*, 376 F.3d 853, 872 (9th Cir. 2004) (*quoting California v. Block*, 690 F.2d 753, 767 (9th Cir. 1982)).

[56] *Morongo Band of Mission Indians v. FAA*, 161 F.3d 569, 575 (9th Cir. 1998); *Alaska Wilderness Recreation & Tourism v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995).

[57] *Methow Valley Citizens Council v. Regional Forester*, 833 F.2d 810, 815-16 (9th Cir. 1987) (impact statements must consider all reasonable alternatives that accomplish project purpose, but need not consider alternatives not reasonably related to the purpose).

Courts require an agency's definition to be reasonable.[58] Courts impose this standard to ensure that agencies do not avoid NEPA's requirements by defining a project's purpose so narrowly as to preclude consideration of reasonable alternatives.[59] Of course, as discussed above, the purpose and need for a project may not be based on an unstated and unanalyzed purpose and need, in whole or in part.

A. The Range of Alternatives in the FEIS/PRMP Is Inadequate

The BLM failed to consider a reasonable range of alternatives in the FEIS/PRMP. First, BLM explains that it did not consider an alternative that would examine the status quo, which is implementation of the Northwest Forest Plan *as amended and currently implemented*.[60] BLM's rationale for not analyzing this alternative is that:

> It is not possible to analyze continuation of the current practices within the decision area as the No Action alternative for two reasons. First, implementation of the timber management program has departed substantially from the outcomes predicted in the 1995 RMPs, and the manner and intensity of this departure has varied substantially over time and among districts (USDI BLM 2012, pp. 6–12). There is no apparent basis on which the BLM might select and project into the future the continuation of practices from a specific year (or set of years) since 1995. Second, continuing to harvest timber at the current declared annual productive capacity level for multiple decades into the future would not be possible using the current practices of predominately thinning harvests (USDI BLM 2012, pp. 6–12). The No Action alternative provides a benchmark to compare outputs and effects, even though this alternative does not meet the purpose and need of the project. Because of the inherent unsustainability and variability of current practices, the BLM cannot project their implementation into the future; thus, analyzing continuation of the current practices would not serve the essential function of the No Action alternative of providing a baseline for comparison of outputs and effects. [61]

This rationale is arbitrary and capricious. While it may be true that the BLM's timber program has departed from timber harvest *estimates* in existing RMPs or even the NWFP, this does not mean that BLM cannot model or predict how existing RMPs will affect the environment, or how they are currently being implemented. BLM could simply forecast sustained yield timber

[58] *City of Carmel-by-the-Sea v. United States Dep't of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997); *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 195-96 (D.C. Cir. 1991).

[59] *Simmons v. United States Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997); *City of New York v. United States Dep't of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983); *Citizens Against Burlington*, 938 F.2d at 196.

[60] DEIS at 77-79; FEIS/PRMP at 29 ("The BLM is carrying forward the No-Action alternative as presented in the draft RMP/EIS."); *see also* FEIS/PRMP at 100-103 (similar rationale as in the DEIS for not considering either continued implementation of the NWFP as currently required or recalculating a sustainable yield under the NWFP as implemented).

[61] FEIS at 100.

outputs based on continued application of the RMPs as amended by court order or other change; and BLM provides no evidence that this approach is inappropriate. Indeed, in order for the agency to conclude that the existing RMPs are not "sustainable over time," it must have completed some sort of calculation but this evidence is not presented in the FEIS/PRMP.[62]

Similarly, BLM claims that "continuing to harvest timber at the declared annual productive capacity level for multiple decades into the future would not be possible using the current practices," and cites its 2012 *Resource Management Plan Evaluation Report: Western Oregon* for support. However, that report simply lists reasons why BLM has not met the timber targets in existing RMPs, it not does not analyze or explain why it would be impossible to continue to implement existing RMPs as amended by the NFP at some sustained yield level and also project the other environmental consequences of this course of action into the future.[63] In short, there is no reason BLM cannot re-calculate and present as an alternative what it determines would be the sustained yield of timber from BLM lands under the Northwest Forest Plan as amended and currently implemented. This too would be a reasonable alternative, especially since none of BLM's legal obligations require any particular level of sustained yield of timber from its lands.

B. Failure to Fully Articulate the Environmental Consequences of the Alternatives

The alternatives in the FEIS/PRMP each contains different mixes of uses that – broadly speaking – seek to offset any environmental "benefit" (i.e., protection) with a commensurate amount of environmental "harm" (i.e., extraction). While this is an attempt to develop alternatives that are "balanced," in practice it means that the public cannot assess the individual components of each alternative. Instead, the public is left with the impression that more timber harvest means less environmental protection, which, while likely true to some extent, does not allow for the public to have a true understanding of the actual differences among the alternatives, or what combination of particular aspects of particular alternatives have what particular environmental effects. Moreover, for some resources the FEIS simply describes environmental consequences in a "relative" fashion, stating that impacts would be "greater" for some alternatives than for others. For example, an alternative that allocates more land to the timber harvest base, but also decreases riparian buffers and increases ACEC designations over the status quo may have the "same" effects on fisheries as an alternative that reduces lands in the harvest base but also increases riparian buffers and does not designate any additional ACECs. The FEIS/PRMP approach to developing and describing the relative effects of the alternatives does

[62] The FEIS p 101 says "This analytical conclusion is consistent with the plan evaluations that the BLM conducted in 2012, which determined that the current timber harvest practices are "not sustainable at the declared ASQ level" due to reliance on predominately thinning (USDI BLM 2012, pp. 10–11)." This indicates that BLM failed to consider whether the current program is sustainable at a lower rate of harvest. BLM failed to recognize that harvest rates lower than the declared ASQ are inherently sustainable. BLM could adopt an RMP that focuses on thinning dense young stands for the predicted 10-15 year duration of the RMP, then let future decision-makers decide what to do next with the well-stocked forests created by that plan. Increasing options for future decision-makers is very sustainable.

[63] 5 U.S.C. § 706(2)(A).

not allow the public to clearly understand the actual *differences among* alternatives in an absolute sense and provide meaningful input to the decisionmaker about a reasoned choice among them.[64]

C. Increased Discretion under the PRMP Has Adverse Environmental Consequences that Are Not Disclosed or Discussed

BLM's internal agency reward system, which is not described or disclosed in the FEIS/PRMP, leads to unintended and undisclosed consequences. Unreasonably high timber targets combined with highly discretionary standards and guidelines, *see infra* (discussing these flaws), will lead to more significant environmental effects than the FEIS describes and a failure to attain environmental objectives.

The FEIS must take a hard look at the adverse effects from increased project-level discretion in the absence of standards and guidelines like those in the NWFP, in combination with the agency's internal reward system, especially the increased flexibility for logging in reserves. Rules for riparian reserves and LSRs provide too much discretion, allowing BLM to log inside the riparian areas for reasons other than restoring aquatic resources. Logging often causes a mix of positive and negative effects. In an effort to meet timber targets and advance under the agency's internal reward system, BLM staff will focus on the benefits of logging and ignore the adverse trade-offs, and this will likely lead to logging in reserves with net negative effects on ecological objectives for the reserves.[65]

VI. BLM FAILED TO RESPOND TO COMMENTS

Protesters object to the BLM's incomplete response to comments. BLM responded to some comments and ignored others, many of which raised substantive and compelling issues with the analysis in the DEIS. We hereby incorporate by reference into this protest all substantive comments that were not adequately addressed in the Response to Comments, FEIS Appendix W.

The Response to Comments repeatedly denies stating various conclusions because it merely cited studies stating those conclusions. This is misleading. How are the public and the decision-maker to distinguish among things that the FEIS says and things stated by others and included in the FEIS? When BLM describes the conclusions of others, they are adopting those views, unless they are clearly part of a discussion of opposing views.

BLM failed to respond to public comments concerning BLM's improper interpretation of the O&C Act. BLM says "FLPMA specifically provides that if there is any conflict between its provisions and the O&C Act related to management of timber resources or the disposition of revenues from the O&C lands and resources, the O&C Act prevails (i.e., takes precedence) (43

[64] *California v. Block*, 690 F.2d at 767.
[65] See Heiken, Doug. 2009. The Case for Protecting Both Old Growth and Mature Forests, Version 1.8. Oregon Wild. http://dl.dropbox.com/u/47741/Mature%20Forests%2C%20Heiken%2C%20v%201.8.pdf

U.S.C. 1701 note (b)). Thus, the multiple-use management direction of the FLPMA does not apply to the O&C lands that are suitable for timber production." FEIS at 6. BLM misreads the law and finds a conflict where there is none. The savings clause of the O&C Act pertains to the distribution of timber receipts, NOT to the establishment of sustainable harvest levels. In fact, the O&C Act is already a multiple use law, recognizing watershed, water flow, recreation, and community stability. The multiple use mandate in FLPMA is not inconsistent with the O&C Act. It just helps BLM more accurately determine sustainable harvest levels by providing a broader scope of public values that BLM can consider in determining sustainable harvest. There is no unavoidable conflict between FLPMA and the O&C Act. BLM conclusion to the contrary is legal error.

BLM failed to address public comments, which said:

Comment: BLM fails to harmonize its legal mandates, and erroneously assumes that multiple use does not apply on lands suitable for timber production.

The DEIS says that FLPMA's multiple use mandate does not apply to lands suitable for timber production because there is a conflict between the mandates of FLMPA and the O&C Act. This is an unsupported assumption. Before finding a conflict, BLM must first try to harmonize the objectives of these acts, which is what the Northwest Forest Plan did, and there is no reason to conclude that this was an error.

In the 1944 Sustained Yield Act, Congress articulated a vision of sustained yield that encompassed, "… maintenance of water supply, regulation of stream flow, prevention of soil erosion, amelioration of climate, and preservation of wildlife." P.L. 78-273. 16 U.S.C. 583. Congress clearly does not see a conflict between sustained yield timber production and water quality or wildlife habitat. The Gang of Four also cautioned that there is "no free lunch." To reconcile these, one must conclude that as long as the timber yield is low enough, other resources can also be sustained.

BLM has the cart before the horse. Any acre that is suitable for timber production is accorded a special status that causes BLM to reject other potential uses of those lands.

The EIS needs to recognize that timber production conflicts with just about every other public benefit that flows from BLM lands.

Before designating lands suitable for timber production, BLM should first determine whether those lands are more suited for other public purposes including, but not limited to: water quality, hydrologic function, slope stability, soil conservation, species recovery, keeping species off of the ESA list, carbon storage/climate stability, recreation, community stability, quality of life, etc.

In responding to public comments on the Northwest Forest Plan EIS the agencies concluded that the Northwest Forest Plan, including the reserve system was consistent with the O&C Act.

Comment: The SEIS fails to acknowledge the Oregon and California (O&C) Lands Act (43 USC Sec. 1181a) as a constraint on the management of O&C lands. Alternative 9 violates the dominant use of O&C lands, and fails to acknowledge that these lands are the subject of special legislation that dedicates them primarily to timber production rather than ecologic (including wildlife) uses. The Endangered Species Act does not require the enormous land set-asides for wildlife which are being proposed, and the magnitude of the exclusion of the timber use must be submitted for congressional review under Section 202(e) of FLPMA.

Response: The management of the O&C lands is governed by a variety of statutes, including the O&C Lands Act, FLPMA, the Endangered Species Act, and the Clean Water Act. The O&C Lands Act requires the Secretary of the Interior to manage O&C lands for permanent forest production; however, such management must also be in accord with sustained-yield principles. Further, that Act requires that management of O&C lands protect watersheds, regulate stream flow, provide for recreational facilities, and contribute to the economic stability of local communities and industries. The Act does not require the Secretary to harvest all old-growth timber or all commercial timber as rapidly as possible or according to any particular schedule. The Secretary has discretion to determine how to manage the forest on a sustained-yield basis that provides for permanency of timber production over a long-term period. The Secretary must necessarily make judgments, informed by as much information as possible, about what kind of management will lead to permanent forest production that satisfies the principle of sustained yield.

O&C lands must also be managed in accordance with other environmental laws such as the Endangered Species Act and the Clean Water Act. Some provisions of these laws take predominance over the O&C Lands Act. For instance, the Endangered Species Act (ESA) requires the Secretary to insure that management of O&C lands will not likely result in jeopardy to listed species or destruction or adverse modification of critical habitat. The ESA directs the Secretary and all federal agencies to utilize their authorities to carry out programs for the conservation and recovery of listed species. Although several owl recovery plans have been proposed, the Secretary has not yet adopted final recovery plans for either the northern spotted owl or the marbled murrelet. Alternative 9's Late-Successional and Riparian Reserve concepts are important building blocks in the development of recovery plans to achieve the conservation and recovery of those species.

> One of the purposes of the Endangered Species Act is the preservation of ecosystems upon which endangered and threatened species depend. Certainly, a forward-looking land management policy would require that federal lands be managed in a way to minimize the need to list species under the ESA. Additional species listings could have the effect of further limiting the O&C Lands Act's goals of achieving permanent forest production which would contribute to the economic stability of local communities and industries. The O&C Lands Act ought not be interpreted in such a manner that limits the Secretary's ability to take steps now that would avoid future listings, and additional disruptions, in the future.
>
> Moreover, the concept of creating a set of reserves in which timber harvest is substantially circumscribed across a portion of the landscape, such as the proposed Late Successional Reserves, is consistent with the O&C Lands Act. The Secretary has discretion under the O&C Lands Act to determine the length of harvest rotations on O&C lands or whether any particular tract should be subject to harvest, as well as the intensity of harvest activities which should occur. From a practical point of view, there is little or no on-the-ground difference between a management strategy that provides for a deferred harvest for 80 years on Old-Growth Emphasis Areas as proposed in BLM's Draft Resource Management Plans, and one that sets aside reserves in order to restore and maintain a healthy old-growth forest ecosystem, over the time of the deferred harvest. Regardless of approach, FLPMA requires the Secretary to monitor and revise Resource Management Plans in light of changed circumstances or new information generated through the adaptive management process.
>
> The lands included in the reserves under the preferred alternative greatly constrain, but do not exclude timber use. Silvicultural treatments, such as thinnings, consistent with the objectives for the reserves will be allowed. Since this use is not totally eliminated, this management decision will not be subject to the reporting requirement in Sec. 202(e) of FLPMA.
>
> [1994 NWFP SEIS pp F-114-115 (emphasis added)]

The BLM must recognize that forest production (including but not limited to timber) is embedded within and dependent upon a complex ecological system. Timber production is based on the growth of trees, which is based on the existence of a complex soil food web, a wide variety of nitrogen fixing species, nutrient cycling, fungal abundance and diversity, etc. The USDA Committee of Scientists (COS) recognized that "without ecologically sustainable systems, other uses of the land and its resources could be impaired." (COS p xvi.) The BLM must strive to achieve ecologically sustainable forests, not just sustained production of timber based on simple agricultural models. "Ecological sustainability" means maintaining the composition, structure and processes of an ecological system within certain acceptable bounds

typically described as the natural of historic range of variability. A modern and scientifically credible approach to sustained yield will require BLM to consider:

a. the dynamic nature of ecological systems,

b. the role of natural functions and processes,

c. uncertainty and variability of ecological systems,

d. an integrated assessment of feedbacks and cumulative effects,

e. how to preserve options, and

f. the historic range of variability.

See Committee of Scientists pp. 19-40.
http://web.archive.org/web/20030212110159/www.fs.fed.us/news/science/

In the O&C Act, Congress did not require BLM to apply a one-dimensional view of sustained yield equating maximum tree growth rates with sustained yield. Congress explicitly required BLM to account for water resources, recreation, community stability, and later passed superseding legislation requiring conservation of water quality and imperiled fish and wildlife. The BLM must adopt a modern view of sustained yield.

> Understanding of non-equilibrium thermodynamics and forest evolution in landscape ecology has led to a new appreciation of the importance of disturbance agents such as fire and disease and insect outbreaks in maintaining forest health at the landscape level. Unfortunately, the SY forestry approach still regards forests as timber supply areas where fire and pathogens destroy (waste) valuable timber.
>
> Fire suppression in particular has had a very detrimental impact on habitat for biodiversity. Furthermore, the legacy of problems caused by fire suppression including the increased potential for devastating large scale forest fire will bedevil forest managers far into the future….
>
> A particular revealing criticism of SY management is that we are creating forests that need humans to take care of them. Fire and disease suppression as well as changed age class and species distribution has altered the dynamics of forest evolution that have been developing over millennia, creating conditions potentially overwhelming to established natural defense dynamics. Global warming and other anthropogenic changes will probably further exacerbate these problems.

http://www.pacificfringe.net/sustainedyield/index.htm. BLM must provide room for the entire suite of structures, functions, and processes that integrate to create and maintain healthy forest

ecosystems. Disturbance agents such as fire, insects, and disease must be allowed to operate. The full suite of biodiversity must be preserved, including non-vertebrates that play such crucial roles in soil ecology and nutrient cycling.

Some observers warn, "Distrust claims of sustainability. Because past resource exploitation has seldom been sustainable, any new plan that involves claims of sustainability should be suspect. One should inquire how the difficulties that have been encountered in past resource exploitation are to be overcome." Donald Ludwig, Ray Hilborn, Carl Walters. 1993. Uncertainty, Resource Exploitation, and Conservation: Lessons from History. Science 260(2):17, April 2, 1993. http://www.envsci.nau.edu/sisk/courses/env555/Readings/ludwig1.pdf. Jack Ward Thomas, one of the main authors of the NWFP, cautions against an outdated view of sustained yield timber production:

> The vision that I was taught in school of the "regulated forest" and the resultant predictable outputs of commodities has turned out to have been a dream. And a dream that could only be realized in a time of seemingly boundless virgin forests. This vision held only so long as, no matter what the circumstances, there was more timber available over the next ridge. And, that timber was relatively cheap – easy to access and long – and environmental risks were either less appreciated or more palatable than at present. Further, it was assumed that good forestry was – as a matter of course – good wildlife management, good watershed and management, etc.
>
> By now it is becoming obvious that this dream was built on the pillars of the seemingly boundless virgin forest and an ethic of manifest destiny coupled with hubris of being able to predict the response of nature and humans. This was coupled with an inflated sense of understanding of forested ecosystems and of human control. Perhaps it is time to recognize that such stability is not attainable in any western region except for relatively short periods of years or decades.
>
> Why? Consider the variables that interact to affect long-term stability of the supply of timber. Each variable is subject, more or less independently, to considerable variation over the longer term. Taken together, in terms of their interactions, these variables are guaranteed to produce varying levels of uncertainty and makes attainment of stability unlikely.
>
> …
>
> Oscillations in timber supply can be moderated by taking a conservative view of "annual sale quantity" projections as opposed to the tendency to make overly optimistic projections such as those that resulted in the first forest planning efforts of a decade or so ago.
>
> …

> Insanity has been defined as doing the same things over and over and expecting a different result. Decidedly, optimistic outcomes were the trademark of the first generation of forest plans. With decided regularity, this optimism has not been justified and only reluctantly recognized and abandoned. This caused the agency(s) performance, in terms of commodity production, to consistently come in at below anticipated levels – i.e., the predictions were not valid and belated recognition of that fact, in turn, caused additional instability because of accumulated effects. More conservative approaches are more apt to produce predictable results. And, if results exceed those anticipated, it is easier to adjust commodity yields upward than to deal with the social and political consequences of short fall.
>
> …
>
> While the search for new understanding through science may produce short-term instability [sic] in commodities such as timber supply as managers react to new information, such efforts are essential to long-term stability if renewable natural resources are to be managed in a sustainable fashion. In the end, there can be no turning back from science – no matter now politicaly [sic] expedient that may seem in the short run.
>
> …
>
> In summary, the timber supply from federal lands is one drought, one insect and disease outbreak, one severe fire season, one election, one budget, one successful appeal, one loss in court, one listing of a threatened or endangered species, one new piece of pertinent scientific information, one change in technology, one shift in public opinion, one new law, one loss of a currently available technological tool, one change in market, one shift in interest rates, et al, away from "stability" at all times. And, these changes do not come one at a time, they come in bunches like bananas and the bunches are always changing. So, stability in timber supply from the public lands is simply a myth, a dream that was never founded in reality. It is time to stop pretending.

Jack Ward Thomas, *The Instability of Stability*. Pacific Northwest Regional Economic Conference. Regions in Transition. Spokane. April 1997
http://www.pnrec.org/pnrec97/thomas2.htm.

BLM must respond to opposing viewpoints by taking a hard look at the core issue of sustained yield. Its failure to do so is arbitrary for the reasons described above.

VII. CARBON AND CLIMATE CHANGE

BLM improperly claims that it lacks authority to manage for carbon storage. Global climate change is a new and significant threat to humanity, ecosystems, and the future health of BLM lands, including the O&C lands. We have a moral and legal obligation to minimize and mitigate this threat. *See* 2015 Oslo Principles on Global Climate Change Obligations. http://www.osloprinciples.org/. Climate change is caused by excess CO_2 and other greenhouse gases transferred to the atmosphere from other pools. All temperate and tropical forests, including those in western Oregon, are an important part of the global carbon cycle. Since all forests are an important part of the global carbon cycle, BLM must do its part by managing forests to maintain and increase carbon storage to the maximum extent possible. Managing for carbon storage is consistent with – and even required by – BLM's legal and policy mandates for permanent forest production, watershed protection, community stability, and conserving threatened & endangered wildlife. Global warming is caused by the *cumulative* build-up of greenhouse gases, especially carbon, in the atmosphere. Logging will add to the cumulative total carbon emissions so it is clearly part of the problem and must be minimized and mitigated. Logging will not only transfer carbon from storage to the atmosphere but future regrowth is unlikely to ever make up for the effects of logging, because carbon storage in logged forests will lag carbon storage in unlogged (still growing) forests for decades or centuries. Since the time the 1995 resource management plans were written, there is significant new information reinforcing the need to conserve all existing large stores of carbon in mature and old-growth forests in order to keep carbon in forests and out of the atmosphere in order to mitigate climate change. The FEIS/PRMP fails in what should be one of its most important objectives – to optimize carbon storage.

On June 25, 2013, President Obama released his Climate Action Plan which includes forest conservation among the "first pillar"[66] of efforts to reduce emissions, saying: "**Preserving the Role of Forests in Mitigating Climate Change:** America's forests play a critical role in addressing carbon pollution, removing nearly 12 percent of total U.S. greenhouse gas emissions each year. … Conservation and sustainable management can help to ensure our forests continue to remove carbon from the atmosphere … " http://www.whitehouse.gov/sites/default/files/-image/president27sclimateactionplan.pdf . "[A]dvancing efforts to protect our forests" is also mentioned in the 6th U.S. Climate Action Report under the United Nations Framework Convention on Climate Change (UNFCCC). The agency should advance this national climate goal by conserving public forests. Carbon emissions from logging public lands directly conflict with this important national goal and indicate potential significant impacts not adequately or rationally addressed in the FEIS/PRMP as explained more fully below.

The Copenhagen Accord recognizes the need to avoid dangerous climate change and the role of forests in climate mitigation. "…To achieve the ultimate objective of the Convention to

[66] U.S. Dept of State 2013. draft 6th Climate Action Report http://www.state.gov/e/oes/climate/ccreport2014/index.-htm (page 12).

stabilize greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, we shall, recognizing the scientific view that the increase in global temperature should be below 2 degrees Celsius… We recognize the crucial role of reducing emission from deforestation and forest degradation and the need to enhance removals of greenhouse gas emission by forests and agree on the need to provide positive incentives to such actions." http://www.climatesciencewatch.org/file-uploads/Copenhagen_Accord.pdf.

BLM has not fulfilled "Executive Order 13653, issued on November 6, 2013, which directs the federal agencies to develop or modify programs and policies to promote '…greater climate resilience and carbon sequestration, or other reductions to the sources of climate change.' In response, DOI updated its climate adaptation plan in 2014. The only specific direction with respect to carbon storage or carbon sequestration is to consider developing a formal policy for DOI bureaus to incorporate carbon storage as an explicit element of resource management plans (DOI Climate Change Adaptation Plan, p. 43)." *See* RTC 95, FEIS/PRMP at 1888 (emphasis added). BLM says that DOI and BLM have not set final policy yet, but BLM cannot defer its duties to store carbon on BLM forests pending an ill-defined process. It must recognize that logging decisions now represent a forgone opportunity to improve the climate. Instead BLM hides behind the mantra that "carbon storage increases under all alternatives."' BLM should instead disclose how much less carbon is stored on BLM lands than was stored before people started liquidating the old growth and how much less will be stored than under continued full implementation of the NWFP.

BLM failed to respond to public comments showing that managing BLM lands for carbon storage and climate mitigation would not only be consistent with BLM's existing legal mandates, but that BLM's failure to manage for carbon storage would violate BLM's legal duties, including but not limited to:

- BLM's FLPMA duty to maintain an up-to-date inventory of public lands and their new and emerging resource values (43 USC § 1711) such as carbon;

- BLM's FLPMA duty to give priority to identifying ACECs where special management is needed to prevent irreparable damage and protect life and safety from safety from natural hazards. (43 USC § 1712) such as storing more carbon to mitigate global warming, and protect streamside forests and watersheds from the effects of climate change;

- BLM's FLPMA duty to consider "potential uses of public lands." (43 USC § 1712).

- BLM's FLPMA duty to consider scarcity of values and available alternatives. (43 USC § 1712) such as the unique carbon storing capacity of low elevation forests in this region compared to other regions and ecosystems, and the globally limited supply of climate mitigation alternatives relative to the cumulative global need for carbon storage and avoided emissions. Public comments noted: "The 'carbon density' of Westside forests

exceed that of any forests in North America[67], possibly the world. This means that BLM lands are uniquely suited for sequestering carbon."[68];

- BLM's FLPMA duty to consider long-term vs. short-term benefits. (43 USC § 1712.) This requires BLM to recognize that the benefits of logging are very short-term, while the benefits of climate mitigation through conserving and restoring mature & old-growth forests are both short-and long-term;

- BLM's O&C Act duty to sell timber only at "reasonable prices on a normal market" which serves to correct market failures and compensate for "externalities" such as the social cost of carbon dioxide emissions;

- BLM's O&C Act duty to manage for "permanent forest production," by maximizing carbon storage in order to minimize the predicted effects of climate change, including loss of forest cover, conversion of forest to shrublands, etc.

- BLM's O&C Act duty to "protect watersheds" by maximizing carbon storage in order to minimize the predicted effects of climate change, such as am amplified hydrological cycle, increased storm intensity, increased peak flows that will interact adversely with BLM's road drainage system, etc.;

- BLM's O&C Act duty to "regulate stream flow" by maximizing carbon storage in order to minimize increased predicted peak flows and reduced summer stream flows caused by global warming;

- BLM's O&C Act duty to "contribute to the economic stability of local communities and industries" by maximizing carbon storage in order to minimize the predicted economic impacts of global climate change, ocean acidification, sea level rise, disruption of global food production, harm to human health, and to minimize logging that tends to feed the timber industry that is inherently volatile and destabilizing;

- BLM's O&C Act duty to "provide recreation facilities" by maximizing carbon storage in order to minimize adverse effects of climate change on recreation, such as increased floods that wash-out roads and trails and campgrounds, increased drought and reduced

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[67] Carbon density is a measure of the carbon in live and dead vegetation plus soil carbon measured on a per-acre basis. The westside of the Pacific Northwest is uniquely suited to growing and storing carbon in forests. *See* Figure 6 in Ingerson, Ann L. 2007. U.S. Forest Carbon and Climate Change. Washington, D.C.: The Wilderness Society. http://www.wilderness.org/Library/Documents/upload/ForestCarbon-ClimateChange.pdf

[68] See Christine L. Goodale, Michael J. Apps, Richard A. Birdsey, Christopher B. Field, Linda S. Heath, Richard A. Houghton, Jennifer C. Jenkins, Gundolf H. Kohlmaier, Werner Kurz, Shirong Liu, Gert-Jan Nabuurs, Sten Nilsson, And Anatoly Z. Shvidenko. 2002. Forest Carbon Sinks In The Northern Hemisphere. Ecological Applications, 12(3), 2002, pp. 891–899q 2002. http://www.whrc.org/resources/published_literature/pdf/GoodaleEcolAppl.02.pdf ("Over 80% of the estimated sink occurred in one-third of the forest area …").

stream flows that will reduce opportunities for water-based recreation, and reduced habitat quantity and quality that will reduce hunting and fishing opportunities.

- BLM's ESA duty to conserve listed species, conserve the habitat on which listed species depend, and avoid actions that would contribute to the need to list species. BLM failed to fully recognize that maximizing carbon storage would help minimize the effects of global warming and ocean acidification that are predicted to increase the risk of disturbance, increase drought stress, increase intensity of precipitation events, and is thus predicted to make it harder to conserve existing habitat and restore degraded habitat for spotted owl, marbled murrelet, and salmon;

- BLM's Clean Air Act duties, such as 42 USC § 7402(b) requires all federal agencies to use their authorities to further the goals of the Clean Air Act. Sections 7401(b)(1) and 7470(1) set forth clear goals to protect the public welfare by limiting air pollution such as CO_2;

- BLM's Clean Water Act duty to avoid CO2 emissions and help minimize water quality problems such as ocean acidification and polluted road run-off during climate-amplified storms.

Public comments provided extensive evidence and detailed explanations of how BLM's existing legal duties give it not only the authority but a mandate to do more to store carbon and avoid logging that results in greenhouse gas emissions. BLM failed to take a hard look at this issue and failed to respond to comments.

In Response to Comments 6, FEIS/PRMP at 1837-38, BLM explains that it failed to make carbon storage part of the purpose and need because BLM did not recognize that reducing the effects of climate change would help it meet its legal mandates under the O&C Act and ESA and FLMPA. Executive Order 13653, directs agencies to assess climate change related impacts on and risks to the agency's ability to accomplish its missions and programs. If BLM had properly assessed the effects of climate change on its legal mandates it would have recognized the need to incorporate carbon storage into its purpose and need.

BLM says "The Draft RMP/EIS demonstrates that it would not be possible for the BLM to design alternatives specifically to 'address climate change [because of uncertainty]" BLM failed to recognize that regardless of uncertainty, BLM can reduce adverse effects of climate change by managing forests to store more carbon. BLM hides behind uncertainty, when in fact there is little doubt that storing more carbon in forests will help reduce the worst effects of climate change and help meet BLM legal mandates.

In Response to Comments 42, FEIS/PRMP at 1863, BLM refused to consider alternatives that would address climate change by minimizing carbon emissions. "BLM has no specific legal or regulatory mandate or policy direction to manage BLM-administered lands for carbon storage." BLM ignores the fact that increased logging will increase carbon emissions and

exacerbate climate change and ocean acidification which will undermine BLM's efforts to meet the purpose and need as well as legal requirements related to the ESA, CWA, O&C Act, and FLMPA. Public comments explained this in detail.

The Response to Comment says "BLM has various climate-related policies, but none provides an authority for the BLM to manage the decision area to minimize carbon emissions above the statutory mandate to manage for a sustained yield of timber. … BLM cannot stretch its mandate to provide a sustained yield of timber to encompass maximizing carbon storage or minimizing greenhouse gas emissions. … [the EIS] analysis demonstrated that there is a general trade-off between the level of sustained-yield timber production and the level of carbon storage …" BLM has chosen to create a conflict between sustained yield policy and climate policy, when BLM could easily find harmony between the two policies. BLM's must set "sustained yield" at a level that protects the climate, because a stable climate is a prerequisite to permanent forest production, watershed integrity, favorable water flow, community stability, ESA recovery, CWA compliance, etc. Doing anything less than maximizing carbon storage will undermine BLM's compliance with those duties. BLM cannot use the sustained yield mandate as an excuse for irresponsible logging that undermines BLM's duty to conserve listed species, protect watersheds, provide favorable conditions of water flow, enhance community stability, all of which will be made more difficult due to global warming caused in part by BLM's logging. BLM should have considered an alternative that set sustained yield low so that it could do more to conserve forests, store carbon, and avoid GHG emissions. BLM failed to recognize that this interpretation of sustained yield is most consistent with the full suite of legal and policy mandates.

Also, BLM is not selling timber at "reasonable prices" on a "normal market" as contemplated by the O&C Act. Because of externalities, timber prices are too low and timber is being over-produced, while carbon storage (and other public goods) is being under-produced. This well-founded economic framework gives BLM the authority to reduce their estimate of sustained yield in order to provide more habitat, more carbon storage, more stream protection, more recreation, and more scenic values. *See also* RTC #266, FEIS/PRMP at 1951-52 (inadequate response to related points).

In Response to Comments 77, FEIS/PRMP at 1882, BLM refused to consider designating climate refugia such as low elevation river corridors, north-facing slopes, corridors and land-bridges as ACECs because "There is no purpose and need that would result in a designation of "climate refugia" on the landscape." BLM failed to recognize its responsibilities under FLMPA to designate areas requiring special management. Climate change is real, it's here, it's going to get much worse, and BLM needs to identify and protect climate refugia as part of this plan revision in order to meet its obligations under the Endangered Species Act (i.e., its duty to conserve listed species that evolved under conditions that are cooler and less variable), and other legal and policy mandates.

BLM fails to take a hard look at forest conservation as a climate solution. The EIS under-estimates the value of forest conservation and the under-estimates the adverse effects of

logging with respect to mitigating climate change. The FEIS at 171 says "harvesting removes carbon and shifts stand characteristics, such as mean diameters and heights, in more of the landscape to smaller trees and younger age classes that store less carbon." This is good, but the EIS analysis needs to clearly disclose the carbon consequences of the various discrete policy choices that the decision-maker is facing. For instance, the EIS needs to disclose that:

- Wider stream buffers store more carbon than narrow stream buffers;
- Forest reserves store more carbon that timber management areas;
- Large reserves store more carbon than smaller reserves;
- Reserves with strict limits on logging store more carbon than reserves that allow logging;
- Thinning stores more carbon that regen harvest;
- Regen harvest with ≥30% retention stores more carbon than regen with little or no retention;
- Logging to try to limit carbon emissions from fire will likely emit more carbon from logging than will be prevented via fire control. Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1). http://terraweb.forestry.oregonstate.edu/pubs/lawharmon2011.pdf;
- Meeting RA 32 by protecting all forests over 80 years old will store more carbon than meeting RA 32 by conserving forests 150 years and older.

Similarly, wider stream buffers and large, well-protected reserves, will better prepare forests for the extremes of climate change. In most cases, logging will reduce forest resilience, not increase it. The FEIS (p 165) says "Active management would provide opportunities to implement climate change adaptive strategies." However, there is strong evidence that unmanaged forests have great capacity for self-correction and self-organization. BLM should look carefully at all the evidence, including the views of competing experts before concluding that logging is beneficial. Complex native forests are more resilient to climate change than logged forests and simplified plantations. The IPCC recognizes that

> ... [R]educing emissions from deforestation and degradation may also yield co-benefits for adaptation by maintaining biodiversity and other ecosystem goods and services, while plantations, if they reduce biological diversity may diminish adaptive capacity to climate change (e.g., (Chum et al., 2011)). Primary forests tend to be more resilient to climate change and other human-induced environmental changes than secondary forests and plantations (Thompson et al., 2009)....

IPCC AR5, Working Group III, Mitigation of Climate Change, Chapter 11 Agriculture, Forestry and Other Land Use (AFOLU) (Final Draft 2014) pp. 46-47. http://report.mitigation2014.org-/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_chapter11.pdf

BLM failed to respond to the public comment stating "The DEIS does not explain how BLM arrived at the conclusions presented in Figure 3-24, the pie chart showing that fire emits more carbon than "harvest operations." The DIES does not say what kinds of emissions are included in harvest operations. Is it just the fuel used for machinery and transport? Does it include carbon removed from the forest via logging and slash fires? Does it account of the decay of wood products removed from the forest in current and prior years?

In Response to Comments 85, FEIS/PRMP at 1884 and Response to Comments 90, FEIS/PRMP at 1886, BLM continues to assert that logging would not exacerbate climate change because landscape carbon storage would increase under all alternatives, and thus no "carbon debt" would be incurred. BLM fails to recognize that alternatives that allow more forest to live and grow will store more carbon and provide more carbon benefits, while increased logging under the PRMP will harm the climate by transferring more carbon from the forest to the atmosphere. Merely increasing carbon storage over time does not remove all of the extra carbon from the atmosphere. In fact, it does not even remove all of the carbon that BLM has emitted from these lands via logging over the last century. When there is a climate crisis of the current magnitude, doing anything less than the maximum to solve the problem represents harm to the climate. BLM should disclose how much less carbon is stored on BLM lands under the PRMP compared to the amount of carbon that was stored before people started liquidating the old growth.

BLM is making the mistake of comparing carbon "before and after" logging instead of the more accurate, "with and without" the project. Our comments implored BLM to avoid "before-and-after" carbon accounting. BLM cannot say that logging is *carbon neutral* because the forest is capturing more carbon than is being removed across the landscape. This is highly misleading. The proper analysis requires comparison of the amount of carbon with logging under the PRMP and without logging. A no-logging alternative will allow more forests to regrow and capture more carbon. Logging represents a forgone opportunity to store carbon in the forest and thus represents harm to the climate. An analysis like this is not only required to accurately determine the effect of vegetation removal on forest carbon storage but it is also consistent with NEPA requirements to compare *action* and *no action* alternatives.

> The only way to properly evaluate the net carbon impacts of energy from forest biomass [or any vegetation management] is to estimate … net change in atmospheric CO_2 levels over time *with* and *without* the harvest of wood biomass for energy. …[I]t is necessary to construct a baseline, or control, scenario (that is no biomass harvest). … Once a baseline is established, one can assess how switching to wood biomass would change atmospheric carbon levels. … [T]he information provided by only comparing forest carbon stocks before and after

> biomass harvest could be a very misleading indicator of the impact of biomass energy on the atmosphere.

Carellichio, P., Walker, T. 2010. Commentary: The Manomet Study Got the Biomass Carbon Accounting Right. The Forestry Source. 4 Nov 2010. http://www.nxtbook.com/nxtbooks/-saf/forestrysource_201011/index.php#/4.

Similarly, in Response to Comments 95, FEIS/PRMP at 1888, BLM fails to recognize that "foregone opportunities for increased carbon storage in forests" will cause harm to the climate. BLM asserts that "all alternatives would increase carbon storage relative to the current condition." Again, BLM must not be comparing effects "relative to the existing condition" (i.e., before-and-after) but rather should be comparing climate effects with-and-without logging. Using the proper framework reveals that logging represents a forgone opportunity to store carbon so logging will therefor exacerbate global warming and ocean acidification and all of the associated harms to ecosystems, agriculture, human health, communities, industries, and institutions.

In Response to Comments 86, FEIS/PRMP at 1885, BLM refused to consider the disproportionate value of conserving mature & old-growth forests and the disproportionate harm in logging such carbon-rich forests. The Response to Comment says "Since the analysis includes all stands, including older stands, it includes the importance of older stands in carbon storage. An extensive discussion of the role of older forests in storing carbon would not improve the quality of the analysis or provide for a reasoned choice among alternatives" BLM blends all the different types of forests and displays the gross results. BLM fails to fully recognize the climate benefits of an alternative that focuses on thinning young stands and conserving older stands. A reasoned choice among alternatives requires BLM to make a distinction between the greater harm of logging older forests and the relative lesser climate impacts of thinning young forests.

In Response to Comments 89, FEIS/PRMP at 1886, BLM refused to consider the disproportionate climate benefits of retaining and growing more carbon-rich forests near streams, and the disproportionate climate harm caused by the PRMP proposal to shrink riparian reserves and increase logging of the carbon-rich forests near streams. The EIS looked at the "net carbon storage of the different alternatives over time" – effectively blurring the distinctions between forests that grow near streams and those that grow further upslope. BLM failed to recognize that forests on lower slopes tend to be higher productivity, more resilient to disturbance, so they make great places to store carbon. A reasoned choice among alternatives requires BLM to accurately display the carbon and climate consequences of shrinking riparian reserves and increasing logging near streams.

In Response to Comments 106, FEIS/PRMP at 1892, BLM recognized the value of mature & old-growth forests as climate change refugia, but failed to recognize the unique value of wider riparian reserves. Forests near streams tend to be cool, moist, and relatively high productivity so they can grow complex canopies that serve as buffers against thermal extremes.

Similarly, BLM failed to disclose the carbon storage and climate benefits *per acre* of reserves versus *per acre* of timber harvest areas. This information would help inform the public of the climate benefits of reserves and help the decision-maker make a reasoned choice among alternatives with more reserves or more timber harvest areas. Failure to consider this information may have influenced BLM to make a misguided decision to shrink riparian reserves.

In Response to Comments 87, FEIS/PRMP at 1885, and Response to Comments 97, FEIS/PRMP at 1889, BLM continues to assert (incorrectly) that fuel reduction logging has the "potential" to reduce carbon losses from wildfire. "BLM does not claim that forest management would prevent wildfires from occurring, just that management could reduce wildfire intensity and severity, potentially reducing greenhouse gas emissions from wildfire." This is highly improbable and is directly contradicted by numerous studies cited in public comments. Carbon emissions from logging to reduce fires are likely to be many times greater than the carbon emissions from wildfire alone. Law & Harmon (2011) conducted a literature review and concluded that

> Thinning forests to reduce potential carbon losses due to wildfire is in direct conflict with carbon sequestration goals, and, if implemented, would result in a net emission of CO2 to the atmosphere because the amount of carbon removed to change fire behavior is often far larger than that saved by changing fire behavior, and more area has to be harvested than will ultimately burn over the period of effectiveness of the thinning treatment.

Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1). http://terraweb.forestry.oregonstate.edu/pubs/lawharmon2011.pdf.

BLM fails to provide an accurate analysis of the effects of logging on carbon emissions. BLM recites some evidence on both sides but fails to disclose that BLM's logging plans will likely cause net carbon emissions, rather than provide climate benefits as implied by the FEIS. The FEIS at 200-201 says that there are still potential climate benefits of fuel reduction logging in forests with frequent fire return intervals, but BLM fails to recognize that these benefits are unlikely to be realized in the real world because 1) BLM has a policy of aggressive fire suppression, so even where the natural of historic fire return interval might be short, the de facto fire return intervals are longer so logging would not produce the climate the benefits ascribed to logging; and 2) only very light-touch fuel reduction might yield climate benefits but BLM's fuel reduction methods are much more aggressive. To realize the carbon benefits of fuel reduction BLM must retain all of the carbon-rich) large and medium sizes trees and remove only the small fuels with little carbon. This would typically be done as a non-commercial vegetation management project. BLM's fuel-reduction timber sales tend to remove medium and large trees containing a much larger fraction of the carbon in the forest. BLM failed to disclose that there are no climate benefits from typical "fuel-reduction" logging conduct on BLM lands. Public comments provided detailed information about why the assertions in the DEIS were inaccurate,

and asked BLM to more carefully explore opposing viewpoints, but BLM failed to correct the errors.

In Response to Comments 117, FEIS/PRMP at 1896, BLM fails to mitigate for the likely adverse effects of climate change on the northern spotted owl, such as increased precipitation during spring, which is closely associated with spotted owl nest failure. Mitigation measures could include: (1) conserving more carbon in BLM forest to reduce the worst effects of climate change, (2) expanding the LSRs, recognizing that a larger reserve network can support more owls and a larger owl population is likely to be more resilient to stochastic fluctuations caused by bad weather, (3) closing loopholes that allow logging in LSRs so that owl habitat has more dense complex structure that protects owls from the elements, or (4) retaining wider stream buffers which are used disproportionately by spotted owls.

In Responses to Comments 258 and 259, FEIS/PRMP at 1948-49, BLM failed to consider more accurate estimates of the social cost of carbon dioxide emissions. The Response to Comment said, "The value reflects the latest Federal estimates of the social cost of carbon, using the guidance and methods outlined by the Council on Environmental Quality." The Response to Comment said "BLM believes using the current (2015) social cost of carbon estimates in the Proposed RMP/Final EIS is justified, because more comprehensive, peer-reviewed estimates are not available." NEPA does not allow BLM to limit its analysis that way. BLM failed to respond to detailed comments about various criticisms of the official cost estimates. Several important costs are left out of the official estimates, so higher values make more sense. BLM failed to fulfill its duty to disclose and consider opposing viewpoints.

Many of the issues discussed in this section are also described in greater detail in the attached "Points for Supplement to Protest of: BLM's Proposed Resource Management Plan/Final Environmental Impact Statement: Western Oregon – The BLM's Failure to Describe the Negative Economic Impacts of Logging," and in "Points for Supplement to Protest of: BLM's Proposed Resource Management Plan/Final Environmental Impact Statement: Western Oregon – BLM's Failure to Describe Accurately the Benefits and Costs of Logging," prepared by Ernie Niemi of Natural Resource Economics, Inc. These additional protest points were addressed in comments on the DEIS and are incorporated into this protest by this reference as though fully set forth herein.

In Response to Comments 285, FEIS/PRMP at 1961, BLM refused to consider the environmental justice implications of BLM's contribution to excessive CO2 emissions and global climate change. BLM failed to respond to detailed public comments explaining how logging will contribute to the adverse effects of global warming, including adverse effects on human health and disproportionate effects on poor and disadvantaged people.

BLM's analysis of environmental justice refused to recognize that its decision to forego opportunities to store more carbon represents an increase in the adverse effects of climate change and that these effects will fall disproportionally on the poor and disadvantaged and will extend far beyond the counties in the planning area. The Minnesota PUC explains that "GHGs are

different from criteria pollutants in the spatial scale of their impacts. Because GHGs emitted in one location on earth mix with GHGs emitted from all other locations on the planet, each GHG molecule emitted contributes to climate change experienced everywhere. … To incorporate only [local] damages … would be to ignore the vast majority of external costs. If every political territory only considered external damages within its own boundaries…'there would be virtually no correcting for externalities.'" Minnesota PUC. Findings of Fact, Conclusions, and Recommendations: Carbon Dioxide Values. In the Matter of the Further Investigation into Environmental and Socioeconomic Costs Under Minnesota Statutes Section 216B.2422, Subdivision 3. https://mn.gov/oah/assets/2500-31888-environmental-socioeconomic-costs-carbon-report_tcm19-222628.pdf

Public comments explained in great detail how climate change will affect public health, environmental justice on a global scale. CO2 has a long-residence time and the atmosphere is well-circulated, so CO2 molecules emitted by logging (and CO2 molecules not absorbed as a consequence of BLM's decision to kill trees and halt photosynthesis) will contribute to climate impacts at the global scale. It is well-established that "Agencies must analyze indirect effects, which are caused by the action, are later in time or farther removed in distance, but are still reasonably foreseeable,.… CEQ has determined that agencies must include analysis of reasonably foreseeable transboundary effects of proposed actions in their analysis of proposed actions in the United States." July 1, 1997 Memo from CEQ Chair Kathleen McGinty to the Heads of Agencies, RE: Transboundary Environmental Impacts. http://ceq.hss.doe.gov/nepa/regs/transguide.html. Furthermore, even if BLM limits the scope of its analysis of environmental justice and human health, many of the adverse effects experienced globally, will also happen locally, and BLM has not fully disclosed those effects. BLM failed to take a hard look at the fact that the adverse effects of climate change will fall disproportionately on the poor and disadvantaged.

California's Office of the Attorney General prepared a report on the "unequal impacts" of global climate change, saying

> Global warming will not affect everyone equally. As the Office of Environmental Health Hazard Assessment stated in its 2010 report, the adverse impacts of climate change are expected disproportionately to affect those who are socially and economically disadvantaged, including the urban poor, the elderly, children, traditional societies, agricultural workers and rural populations. Disproportionate impacts can occur where certain groups lack the social and economic resources necessary to relocate to avoid impacts, or to purchase the technology necessary to adapt to our changing climate. According to a 2009 report by California's Climate Change Center, "[w]ithout proactive policies to address these equity concerns, climate change will likely reinforce and amplify current as well as future socioeconomic disparities, leaving low-income, minority, and politically marginalized groups with fewer economic opportunities and more environmental and health burdens."

State of California Department of Justice - Office of the Attorney General. https://oag.ca.gov/environment/climate-change/unequal-impacts *referencing* Linda Mazur, Carmen Milanes, Karen Randles, David Siegel, 2010. Indicators of Climate Change in California: Environmental Justice Impacts December 2010. http://oehha.ca.gov/multimedia/epic/pdf/ClimateChangeEJ123110.pdf

One important way to avoid unequal distribution of the costs of climate change is to avoid those costs in the first place. EPA just released a report on the impacts of climate change and the value of mitigation. They only looked at environmental justice in one section of the report dealing with coastal property impacts such as sea level rise, but they found that many disadvantaged communities along the west coast are especially vulnerable and would benefit from mitigation efforts (such as optimizing carbon storage in BLM forests). "Areas of higher social vulnerability are more likely to be abandoned than protected in response to unmitigated sea level rise and storm surge." The basic message is that taking action to store carbon today helps avoid imposition of high costs of adaptation on communities least able to afford those costs. EPA 2015. Climate Change in the United States: Benefits of Global Action. http://www2.epa.gov/-cira/downloads-cira-report; http://www2.epa.gov/sites/production/files/201506/documents-/coastalproperty.pdf The example of coastal property damage is just a small part of the environmental justice implications of climate change. As another example, the cost of any adverse health impact associated with climate change will fall disproportionally on poor people with limited access to health care. In fact, nearly all future adaptation costs caused by global climate change will fall unfairly on those least able to pay.

The Response to Comment says, "The commenter does not explain how increasing the Riparian Reserve widths would account for 'increasing stressors from potential extreme weather events.' For example, the analysis of stream shading in the Draft RMP/EIS demonstrated that reducing the Riparian Reserve width from two site-potential tree heights under the No Action alternative to one site-potential tree height under Alternatives A and D, coupled with the management direction within the Riparian Reserve under Alternatives A and D, would not result in a measurable difference in stream shading. … The commenter does not explain why they believe the second site-potential tree height width is necessary to provide stream shading or to provide other functions of the Riparian Reserve, or how extreme weather events, such as floods and droughts, would alter the stream shading or other functions of the Riparian Reserve." Stream shading is but one function provided by riparian reserves. BLM has a duty to disclose the important functions that are lost when the purpose of riparian reserves is narrowed to exclusively aquatic when the current Northwest Forest Plan adopted wider buffers based on a combination of aquatic AND terrestrial purposes. In fact, public comments explained many ways that wider riparian buffers would help make watersheds, ecosystems, and wildlife populations more resilient to climate change. Wider buffers would:

- provide great canopy cover over a broader area that serves as thermal refugia for wildlife such as spotted owls and salamanders that spend disproportionate time in forests near

streams, but might find those areas harvested after buffers are reduced by half;

- help reduce cumulative watershed effects and peak flows caused by logging and roads that are discouraged within riparian reserves. Mare acres of reserves means less logging and less roads and more vegetation cover to intercept storm energy, and fewer roads that extend the drainage network;

- would maintain and increase carbon stores, avoid GHG emissions, and mitigate climate change; and

- increase recruitment of down wood in and near streams. Dead and down wood captures, stores and releases energy, water, sediment, and nutrients, which improves habitat characteristics. Wider buffers means more wood over a larger area.

In Response to Comments 118, FEIS/PRMP at 1896, BLM asserts that watersheds will be adequately maintained in the face of climate change (and likely increased storm intensity) even after riparian reserves have been cut in half. This is not supported by the evidence, and indeed BLM sites nothing for this proposition. The EIS does not take a hard look at the effects of reduced stream protection and loss of watershed integrity in the face of increase climate stress and fails to take a hard look the cumulative effects of both climate change and reduced stream buffers.

BLM over-estimated the benefits of thinning and under-estimated the adverse effects of thinning as a climate preparation strategy. BLM failed to respond to the following comments:

> **Comment:** DEIS (p 158) describes for thinning as a "no regrets" approach to climate adaptation. This is misleading. No regrets describes strategies that are beneficial whether or not climate driven disturbance occurs. This is not the case here. Forest thinning involves complex trade-offs that could help or harm the forest and its inhabitants, and the alleged benefits often accrue only if treated areas subsequently burn during the brief window that fuel reduction treatments may be effective. This is not a no regrets strategy.
>
> A more specific example is the spotted owls that prefers to live in fuel-rich forests with high canopy cover. Thinning to reduce climate stress will likely result in adverse effects on spotted owls. Thinning is therefore NOT a "no regrets" strategy for spotted owls. In fact, leaving suitable spotted owl habitat unmanaged is probably the closest thing to a no regrets climate strategy for the spotted owl. The EIS fails to make this important point clear. Even when logging is conducted with an intention to reduce fire effects, such logging will still cause net negative effects on spotted owls and other wildlife that prefer to live in forests with dense canopy cover and complex structure. The DEIS failed to adequately disclose trade-offs between the needs of wildlife and the adverse effects of logging for fire

resiliency. The net effects of logging plus wildfire are far worse for wildlife than the effects of fire alone.

Logging intended to benefit dense forest habitat will also reduce the quality of habitat by removing various constituent elements of their preferred habitat, and the NEPA analysis must therefore include some evaluation of ecological costs and benefits — e.g., the high probability that logging will degrade habitat vs. the low probability that fuel reduction logging will interact favorably with fire and thus benefit habitat. This evaluation requires an estimate of the probability of future wildfire. To assume, as many analyses do, a 100% chance of future wildfire over-estimates the likelihood of treatments will interact with fire, thus over-estimating the ecological value of fuel treatments, and under-estimating the ecological effects of logging on habitat. See Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. V 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf.

…

DEIS pp. 773-774 identifies "Issue 3" whether the alternatives will help reduce the loss of habitat due to wildfire, but the DEIS says no additional analysis is required, and the reasons given are confusing: "As explained in **Appendix S**, the relative habitat suitability surfaces the BLM developed to address Conservation Needs 1, 2 and 4 include forecasts of habitat change from wildfire. Thus, the evaluations of Conservation Needs 1, 2 and 4 also address Conservation Need 3. The BLM needed no additional analysis." We could find no analysis in Appendix S or elsewhere in the EIS explaining that alternatives with more logging will create hazardous fuel condition and expose spotted owls to greater risk from wildfire.

…

To justify such fuel reduction logging in suitable owl habitat on ecological grounds requires several findings: (1) that wildfire is highly likely to occur at the site of the treatment, (2) that if fire does occur it is likely to be a severe stand-replacing event, and (3) that spotted owls are more likely to be harmed and imperiled by wildfire than by logging at a scale necessary to reduce fire hazard. Available evidence does not support any of these findings, which raises serious questions about the need for and efficacy of logging to reduce fuels in western Oregon and other forests lacking frequent fire return intervals.

The probabilistic element of the risk equation demands careful consideration. Both logging and fire have meaningful consequences, so the issue really boils down to a comparative probabilistic risk assessment where risk is characterized

by two quantities: (1) the magnitude (severity) of the possible adverse consequence(s), and (2) the likelihood (probability) of occurrence of each consequence.

Framework for Assessing the Risk of Wildfire vs. Fuel Reduction Logging			
	Likelihood of event	Magnitude of harm	Net Benefit
Wildfire	LOW: Stand replacing wildfire is not common in western Oregon. Fire suppression policy prevails. The chance that any given acre of forest will experience wildfire is low.	LOW: The majority of wildfire effects are not stand replacing. Fire is a natural process to which native wildlife are adapted. There is still a deficit of natural fire processes on the landscape.	Fire is likely less harmful to habitat than fuel reduction logging.
Logging	HIGH: To be effective in controlling fire, logging must be very extensive, and sustained. Many more acres would need to be logged than would burn.	HIGH: Widespread logging will have significant impacts on canopy, microclimate, understory vegetation, down wood, and long-term effects on recruitment of large trees and snags.	Fuel reduction logging is likely more harmful to habitat than wildfire.

The white paper is organized around these risk evaluation parameters.

In spite of what we often hear, that federal forests are not at imminent risk of destruction by wildfire. Fire return intervals remain relatively long, due to both natural factors and active fire suppression policies. Wildfire severity also remains moderate. Most wildfires are NOT stand replacing. Most fires are in fact low and moderate severity.

The location, timing, and severity of future fire events cannot be predicted making it difficult to determine which forests will benefit from treatment – consequently fuel treatments must be extensive and many stands will be treated unnecessarily, thus incurring all the costs of fuel logging, but receiving none of the beneficial effects on fire behavior.

Furthermore, logging for purposes of fuel reduction has impacts on owl and prey habitat that remain under-appreciated, especially the reduction of complex woody structure, and the long-term reduction in recruitment of large snags and dead wood. Fuel reduction logging also has complex effects on fire hazard with

> potential to increase fire hazard, especially when fuel reduction efforts involve removal of canopy trees.
>
> When all this evidence is put together, it becomes clear that "saving" the spotted owl by logging its habitat to reduce fuels often does not make any sense.
>
> Similar conclusions were reached is several studies, reviews, and expert commentaries … Dennis C. Odion, Chad T. Hanson, Dominick. A. DellaSala, William L. Baker, and Monica L. Bond. 2014. Effects of Fire and Commercial Thinning on Future Habitat of the Northern Spotted Owl. The Open Ecology Journal, 2014, 7, 37-51 37. http://benthamopen.com/toecolj/articles/V007/37TOECOLJ.pdf.

BLM failed to respond to public comments urging greater conservation of older forests to compensate for the expected increase in younger forests caused by climate-induced disturbance:

> **Comment:** DEIS (p 157) says climate change will result in "changes in disturbance regimes [that] could disfavor species associated with old-growth forests, by shifting more of the landscape into earlier seral stages, altering species compositions to ones less preferred, reducing the extent of large trees and structurally-complex forest, and decreasing patch sizes preferred for different life stages, such as nesting…" The NWFP assumed that eventually 80% of the reserves would grow old and provide late successional habitat, while at any given time approximately 20% of the reserves might be affected by disturbance. As a result of climate change these proportions are likely to shift toward greater disturbance and more younger forests. BLM should mitigate for this by adopting a final alternative that protects all suitable owl habitat, not just a subset of high quality habitat, and by protecting larger LSRs and riparian reserves so that there is a larger part of the landscape given a chance to grow old and provide complex habitat.

The FEIS/PRMP shifts from an existing emphasis on thinning to a new emphasis on regeneration harvest, when the climate trends suggest just the opposite is needed. Increasing regeneration harvest will reinforce the effects of climate change, rather than mitigate that trend. This is arbitrary and capricious because it conflicts with BLM's legal duties and the available scientific evidence.

VIII. RIPARIAN RESERVES AND THE AQUATIC CONSERVATION STRATEGY

A. BLM failed to take a hard look at the adverse effects of shrinking riparian reserves and increasing discretion to log near streams

There are two main problems with the FEIS/PRMP decision to reduce streams buffers. First, the spatial extent of the buffers is reduced without any compelling justification, and

second, the standards & guidelines governing activities in the buffers are weakened which will allow many activities to degrade conditions that require careful conservation. The NWFP "as written" prohibits logging in riparian reserves and curtails all damaging activities. BLM cannot rely on its failure to actually implement the NWFP as a basis for rewriting the rules for riparian reserves and use this false starting point to make it appear as though the FEIS/PRMP are an improvement to the NWFP.

In Response to Comments 156, FEIS/PRMP at 1912), BLM says "Under all action alternatives and the Proposed RMP, the Riparian Reserve is the same for fish-bearing perennial streams, fish-bearing intermittent streams, and non-fish-bearing perennial streams. Therefore, all streams that could provide habitat for fish would receive the same level of protection under all action alternatives and the Proposed RMP." This reveals two errors: First, BLM failed to consider action alternatives with wider buffers on small streams. Second, BLM failed to take a hard look at the lack of protection for small headwater streams (intermittent, non-fish bearing streams) that exist in all watersheds and supply water to fish-bearing streams. The failure to protect these small streams will degrade water quality and fish habitat downstream where fish live. The NWFP recognized this and provided wider buffers on small streams. BLM has not taken a hard look at the adverse effects of this radical departure from the ACS or explained the scientific basis for its decision.

In Response to Comments 196, FEIS/PRMP at 1926, BLM says "The commenter mistakenly implies that there would be "increased logging in riparian areas" under the alternatives. All action alternatives would have less Riparian Reserve thinning than the No Action alternative and most alternatives would have less thinning than the BLM has been implementing in the past two decades." BLM fails to recognize that by cutting riparian reserves in half, and re-allocating the second site-potential tree to the Harvest Land Base (in many cases), and allowing (if not encouraging) more ground disturbing activity within this area, all the action alternatives will allow extensive harvest in areas that were previously protected as riparian reserves. This is a huge oversight and a misleading perspective that permeates the analysis in the EIS and renders it arbitrary.

The rationale provided in the Northwest Forest Plan for both the extent of stream buffers and the standards & guidelines remains scientifically robust. BLM failed to provide a compelling rationale for either of these changes. BLM does not provide a scientific or other basis for disregarding comments like the following:

> **Comment:** The DEIS does not address the original reasons for adopting wider buffers, nor provide a compelling alternative rationale for the proposed radical reduction of stream buffers. The Northwest Forest Plan adopted wider riparian reserves to meet a specific set of objectives that encompassed both aquatic and terrestrial wildlife and to mitigate cumulative effects. When an agency proposes to change course after making an important policy decision, the courts have consistently held that NEPA analysis must clearly explain the rationale for the change. This requires addressing the reasons for the original decision. The DEIS

appears to lack any clear disclosure of the multi-faceted purposes of the riparian reserves and the diverse aquatic and terrestrial values that were intended to benefit from the adoption of wider stream buffers. The EIS needs to present the decision-maker with a clear picture of all the adverse impacts that will be caused by the choice whether to maintain or reduce stream buffers and whether to maintain or weaken rules protecting those buffers.

The Northwest Forest Plan explicitly adopted wider stream buffers for a variety of reasons that remain compelling to this day. BLM must not reverse the policy decision to protect wide stream buffers absent a clear disclosure of a competing rationale and disclosure of the adverse effects of reduced protection for streamside forests. Oregon Wild has carefully reviewed and documented the original reasons for adopting wide stream buffers and Oregon Wild convincingly refutes all the rationales for reduced stream protection offered to-date. BLM must carefully review and respond to this analysis. See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf. BLM is proposing to dramatically change the purposes of the riparian reserves in the Northwest Forest Plan from terrestrial AND aquatic purposes, to exclusively aquatic purposes. In making this change, BLM must carefully evaluate the original broad purposes of the riparian reserves, and provide a clear and compelling rationale for narrowing those purposes.

One of the key purposes of wide riparian buffers was to provide for dispersal of terrestrial organisms. This rationale has only gained traction in the years since the Northwest Forest Plan was adopted. See Alexander K. Fremier. Leona K. Svancara, Michael Kiparsky, Dale D. Goble, Stephan Gmur, Barbara Cosens, Jocelyn Aycrigg, Frank W. Davis, Robin Kundis Craig, J. Michael Scott (2015) A riparian conservation network for ecological resilience. Biological Conservation 191 (2015) 29–37.

Most of the purposes of the wide riparian reserves adopted in the NWFP cannot be met by protecting forests elsewhere on the landscape. Simply put, meeting Recovery Action 32 is not a substitute for wide riparian buffers. Many of the purposes of the reserves are directly or indirectly connected to the unique slope positions and proximity to streams. For example:

Many amphibians are associated with streams but use habitat much farther than ½ to 1 site-potential tree distance from the stream. Narrow riparian buffers will have direct adverse effects on these amphibian species.

Spotted owls disproportionately use lower slopes near streams. Evidence indicates that spotted owls and barred owls are more likely to tolerate each other's presence in mixed hardwood-conifer forests near streams. These conditions often extent more than ½ to 1 site-potential tree distance from streams.

Marbled murrelets disproportionately rely on nesting habitat near streams. Reducing stream buffers to ½ to 1 site-potential tree will shrink potential marbled murrelet nesting opportunities and expose marbled murrelet nest patches to next predation.

Even wildlife that live within ½ to 1 site-potential tree still rely on protection of forests beyond that narrow buffer. Reducing stream buffers will expose their habitat to edge effects such as increase wind, increased temperature, reduced humidity, and reduced input of down wood which is in short supply as a result of past practices and which so many wildlife species rely on. This is why the authors of the NWFP saw a need for a buffer-on-the-buffer.

The DEIS does not disclose all of these significant adverse effects from reduced stream buffers.

The DEIS analysis of riparian reserves does not address all the values provide by riparian reserves. The analysis focused exclusively on listed fish and water quality, but riparian reserves also provide value to non-aquatic species such as spotted owls and marbled murrelets and Pacific fisher, which spend disproportionate time on lower slopes near streams. Wide riparian buffers also meet the purpose and need to reduce fire hazard by maintaining more mature forest and less regen harvest that leads to hazardous fuel conditions. Wide riparian buffers also contribute to community stability by protecting important public values near streams and by constraining timber harvest that makes communities boom and bust. The DEIS analysis of the alternatives therefore fails to recognize all the important effects of the wide buffers in the no action alternative.

The DEIS is not addressing the unique values of lands near streams. BLM is treating all lands outside of their new narrow buffers as if they were interchangeable in providing habitat functions for spotted owls , marbled murrelets and other wildlife. BLM is assuming that protecting old forest far from streams is equivalent to protecting habitat near streams. This is wrong. The no action alternative protects wider riparian buffers. These forests may appear to resemble upland habitat, but their proximity to streams makes them function differently, and the EIS needs to recognize this.

B. BLM claimed they were considering new information when they were really radically narrowing the scope of information they considered

In Response to Comments 10, FEIS/PRMP at 1840, BLM says "this RMP revision clearly identified new scientific information that the Northwest Forest Plan did not address." As explained above, however, this revision also improperly and illegally dismisses the terrestrial purposes of wide riparian reserves that the Northwest Forest Plan did address. No amount of "new science" about conservation of fish can provide a scientific or rational basis for eliminating reserves intended to protect species other than fish. BLM talks about a robust debate about riparian strategies and claims that new information justifies new strategy with smaller buffers. This is highly misleading. The so-called "robust debate" was about the narrow purpose of protecting fish, not the broader purposes (aquatic AND terrestrial) for the wide riparian buffers adopted in the 1994 NWFP. BLM has not provided a clear justification for reduced riparian buffers, especially in light of the fact that listed species, including northern spotted owl and marbled murrelets, disproportionately use riparian reserves and will be adversely impacts by increased logging in previously protected areas near streams.

Response to Comments 13, FEIS/PRMP at 1845, says "the BLM adopted a purpose and need that is consistent with the agency's discretion and obligations under the FLPMA, O&C Act, ESA, Clean Water Act, and other applicable statutes. … The different Riparian Reserve strategies and different analytical assumptions related to Riparian Reserve management were all included in the vegetation modeling, which in turn informed the analysis of effects on all species, including the northern spotted owl, marbled murrelet, and fisher." BLM does not explain whether this modeling reflected the disproportionate use of streamside forests by owls and murrelets and salamanders, among other species. The PRMP/FEIS also does not disclose the loss of conservation value to particular species form this particular change in riparian reserve strategy.

In Response to Comments 148, FEIS/PRMP at 1908, BLM says "The BLM has not included a management objective for the Riparian Reserve based on the needs of all 'riparian-dependent species,' but has included objectives consistent with BLM laws, regulations, and policy." BLM has not adequately explained the radical shift from wide riparian reserves to meet broad purposes to narrow riparian reserves to meet narrow purposes. Wider stream buffers were adopted in 1994 to provide demographic support and dispersal for terrestrial species that were ESA-listed as well as for species that could become listed. Recovering ESA-listed species and avoiding new listing is required by the laws applicable to the BLM and helps meet BLM's stated objectives to make timber harvest more predictable and to stabilize communities. Since spotted owls and marbled murrelet use stream side forests disproportionately compared to uplands, BLM cannot conclude that adding reserve acres in the uplands will compensate for the loss of more valuable habitat near streams. The upland forests, while important, are relatively less important for northern spotted owl, marbled murrelet, as well as several stream-associated amphibians and mollusks and other invertebrates that could be listed if BLM shrinks riparian reserves as proposed. The PRMP is thus arbitrary and capricious. BLM says that the EIS "analysis

demonstrates that, … the action alternatives would result in effects that are equally protective of ESA-listed fish and water quality as the No Action alternative." This is simply not true with respect to a variety of other wildlife (not just fish) that BLM has refused to take a hard look at.

Response to Comments 151, FEIS/PRMP at 1910, says "The evaluation of proposed thinning in the Riparian Reserve under the Proposed RMP or any action alternative would be solely a test of conformance with the applicable management direction. Under the Proposed RMP and all action alternatives, there would be no "burden of proof" related to thinning in the Riparian Reserve beyond evaluating whether the action would be consistent with the management direction (as with all implementation actions), and there would be no test of such thinning against "attainment of conservation goals." This statement appears to indicate that BLM may conduct logging that knowingly harms fish as long as the management direction is met. BLM failed to take a hard look at the adverse consequences of this significant change in direction or explain why the above statement does not constitute such a change.

BLM says this change from objective-based, to standards-based management of riparian reserves is justified because "The 1995 RMPs directed the implementation of those silvicultural activities (such as thinning) '...needed to attain Aquatic Conservation Strategy objectives.' This required a test of any such management actions as thinning against broad-based ecological goals. This approach of testing implementation actions against management objectives was generally inconsistent with the BLM planning process. As a result, the requirements in the 1995 RMPs unnecessarily confused decision-making . . . ." Asserting confusion is not an adequate explanation for a substantive change that will affect how resources are managed and have on-the-ground environmental effects that are not adequately disclosed or addressed. In addition, the FEIS/PRMP at 91-93, says of the PRMP "In the outer zone, the BLM would conduct thinning, which may include commercial removal, *as needed* to develop diverse and structurally-complex riparian stands." BLM does not address or explain these contradictory statements or which will govern implementation of the PRMP.

The decision to reduce existing two tree width riparian reserves for fish streams to one tree width is wrong because a two tree width riparian reserve is needed to protect critical habitat streams of ESA listed salmonids. A one tree width riparian reserve is an inadequate contribution to the conservation and recovery of threatened and endangered species and inadequate to provide clean water in watersheds.

The FEIS/PRMP violates NEPA because it failed to analyze an alternative or sub-alternative that would continue the existing two tree width reserve with a 120' no cut buffer. This alternative would provide a more relevant comparison to the action alternatives than the current No Action interpretation. The minor amount of reduced ASQ from this reasonable sub-alternative would be compensated with by-product volume from judicious thinning of the outer riparian zones to foster structural complexity and the development of larger trees. Such an analysis may have compelled the BLM to retain the two tree Riparian reserve for critical habitat needed to recover listed salmonids because the trade- off of ASQ volume is small compared to

the benefits to listed fishes and water quality. BLM, however, failed to consider the reasonable alternative.

A two-tree width buffer also would greatly increase the durability of riparian reserves when adjacent lands in the harvest land base are regeneration harvested (i.e., clear-cut). Neither the FEIS nor Reeves et al. in press fully evaluated the need for a two-tree width reserve to provide wood and shade over the next 100-200 years. Throughout the FEIS BLM has modeled tree growth effects over 100-200 years so it is reasonable to assume the kinds and intensity of disturbances the residual riparian reserves would endure would span this period as well. Openings (gaps), regeneration units, and thinning adjacent to the 120-foot no cut buffer within the one tree riparian reserve over the next 100-200 years would make the reserve vulnerable to blowdown which would reduce shade, increase fire hazard and reduce desirable standing large trees. Yet BLM did not address or analyze these effects over this time period and its failure to do so is arbitrary and unreasonable.

The FEIS and Reeves et al. (in press) fail to analyze how groundwater related stream refugia would be adversely affected by logging and road construction in former riparian reserves along critical habitat streams (the second tree width). Springs and seeps are abundant in the existing two tree reserves along fish streams. These springs and seeps contribute to important cool water refugia both through surface flow and ground water flow (e.g., spring fed side channels). Logging, road building, wet stream haul crossings, yarding corridors, OHV route gullies, and mining activities would reduce important sources of streamflow that contribute to local refugia. All of these complex ground water aquifers adjacent streams are in some respects dependent on undisturbed tree cover to maintain desired function. The proposed heavy thinning (60TPA/30% cover), regeneration harvest, and road construction in former riparian reserves would adversely affect groundwater related stream refugia. Project planning cannot possible detect and protect all of the springs and seeps that are hydrologically connected to critical stream habitat. BLM has not analyzed or rationally addressed this issue.

Fire disturbance is certain to impact some riparian reserves adjacent critical habitat. A two-tree width riparian reserve would be more resilient to fire than a 1 tree width riparian reserve. Anticipated regeneration harvest, gaps and heavy commercial thinning mandated by the PRMP would increase the vulnerability of the proposed one-tree width riparian reserve adjacent critical habitat. Even if timber harvest does not increase fire risk, a burned over two-tree riparian reserve will be more effective in preventing post- fire sediment related impacts because post-fire salvage would not be allowed in the two-tree reserve.

A two tree riparian reserve for critical habitat would reduce harmful fine sediment inputs due to road construction, tree harvest, and landsliding. The PRMP would allocate some existing riparian reserves adjacent critical habitat to the harvest land base where road construction and regeneration harvest would be certain to increase landsliding and fine sediment into streams. The existing two tree riparian reserve ensures that most highly unstable inner gorges would be off limits to regeneration harvest and road construction.

A two tree riparian reserve would ensure that critical off channel habitat (e.g., spring fed side-channels, off channel wetlands) would be protected for coho salmon, amphibians and western pond turtles. Project implementation with 1-tree reserves could easily miss these important habitats because they are often small and ephemeral.

A two tree riparian reserve would help ensure that management of nesting areas for declining western pond turtles would not be in conflict with timber harvest, road building and OHV use. A two tree riparian reserve would help prevent the need to list this species and contribute to its recovery.

A two tree riparian reserve would help ensure that management of declining fishers would not be in conflict with timber harvest, road building and OHV use. A two tree riparian reserve along critical habitat fish streams would help prevent the need to list this species and contribute to its recovery.

The NMFS August 21, 2015 comment letter and Frissell et al. 2014 provide the best available science in support of a two-tree riparian reserve adjacent critical stream habitat. The two-tree standard has proven effective at protecting aquatic and other resources over the past 20 years of implementation. The NMFS December 18, 2015 letter acquiesces to the PRMP proposal to reduce riparian reserves by 50% without provide a scientific basis for doing so. The PRMP, the NMFS December 18, 2015 letter, and Reeves et al. (in press) all have the same shortcoming: the one tree riparian reserve is arbitrary and based primarily on conjecture as to effectiveness but is at odds with extensive scientific analyses and information gathered and published over the last 20 years. The riparian reserve 50% reduction is based on unproven and outdated modeling schemes to expedite timber harvest and road building in existing riparian reserves. The NMFS August 21, 2015 letter and Frissell et al. 2014 are based on a proven 20 year track record of effectiveness for 2 tree riparian reserves adjacent critical habitat.

Moreover, the FEIS is wrong to cite Reeves et al. (in press) in support of reducing the width of existing two-tree width Riparian Reserves because the information is not reasonably available for public inspection. The BLM NEPA Handbook explains that the BLM can incorporate any such information by reference if the information is reasonably available for public inspection (USDI BLM 2008, p. 26). FEIS:1910 The FEIS provided no URL to Reeves et al. (in press) and Forest Service research manuscripts 'in press' are not available to the public.

The BLM's decision to allow any sized tree to be commercially removed as "by-product" from riparian reserves is wrong because all trees 20" DBH and greater are needed to maintain and restore critical habitat along streams of ESA listed salmonids and these large trees function to provide clean water in watersheds.

The FEIS/PRMP at 1117-1129 fails to provide tree size retention standards except for fuels management (e.g., "Do not cut trees >12" dbh," FEIS/PRMP at 1125). The FEIS/PRMP at 1119 states that "[m]erchantable timber from thinning and other silvicultural treatments may be made available for sale" but places no tree size restrictions for timber harvest. The FEIS/PRMP

at 284 states that "[f]or most streams in the planning area, a 20" DBH tree can provide functional wood in the stream." Similarly Spies et al. 2013 indicates that these large trees must be retained in riparian reserves since they are the source for large wood. The FEIS/PRMP at 285 states "[m]onitoring results conclude that the ecological condition of approximately two-thirds of the watersheds in the Northwest Forest Plan area have improved in condition in the past two decades. One of the primary factors responsible for this improvement has been the increase in the number of large trees (greater than 20" DBH) within the Riparian Reserve (Reeves et al. 2006, Lanigan et al. 2012, Miller et al. 2015, Reeves et al. in press)." FEIS/PRMP Figure 3-45 at 290 predicts increased trees per acre greater than 20" DBH. Benefits of trees > 20" DBH cannot be realized if these large trees are removed from the riparian reserves through timber harvest. The FEIS/PRMP fails to explain why all trees 20"DBH or greater in riparian reserves are not retained and removed from timber harvest.

Large trees >20"DBH could be felled for placement in streams or killed to create snags as described FEIS/PRMP 1118-1119. These non-commercial treatments would help meet any silvicultural objective for reducing large trees in riparian reserves.

The BLM's decision to allow timber harvest (aka thinning) to reduce outer portions of riparian reserves to only 30% canopy closure is arbitrary because the available scientific evidence indicates spotted owl dispersal habitat requires a minimum of 40% canopy and NRF requires 60% canopy.

The FEIS/PRMP at 1119 states for the "Outer Zone (120 feet to one site-potential tree height), thin stands as needed to ensure that stands are able to provide trees that would function as stable wood in the stream. Maintain at least 30 percent canopy cover and 60 trees per acre expressed as an average at the scale of the portion of the harvest unit within the Riparian Reserve."

There is no scientific basis for degrading or removing NSO habitat in riparian reserves where NSO use is expected to be high. Modeling in Spies et al. 2013 for Riparian Reserves actually supports retention of 90 TPA.

The BLM's decision to allow thinning in the outer zone (i.e., 50 ft. to one site potential tree height) on intermittent non-fish bearing streams is wrong because the thinning will deprive these streams of substantial amounts of large wood over the next 100 years. Natural amounts of wood are needed in these streams to maintain and assist restoration of critical stream habitat located downstream. Natural amounts of wood are needed to ensure clean water in watersheds.

Thinning to 60 trees per acre in the "outer zone" will greatly reduce the ability of these headwater streams to prevent channel erosion (i.e., downcutting) and to ameliorate harmful downstream impacts to critical habitat (e.g., unnatural amounts of sediment, reduced nutrient cycling, reduced flow regulation). Significant amounts of sediment will enter streams due narrow no cut buffer. Spies et al. 2013:13 reports that a 60 foot no cut buffer with thinning in the remaining 190 feet would result in only 58% of large wood recruitment into streams as compared

to a 250' no cut buffer (1 tree height). Figure 11 from Spies et al. 2013 is reproduced below. The PRMP would substantially reduce future wood to important headwater streams by about 50% with only a 50 ft. no cut buffer. This amount of reduction is contrary to law and the stated purpose and need of the PRMP (i.e., the thinning in the outer zone would not meet the purpose of the PRMP to recover listed species and provide clean water). In addition, the actual impacts of the outer zone thinning are not accurately reported in the FEIS, thus misleading the decision maker and the public.

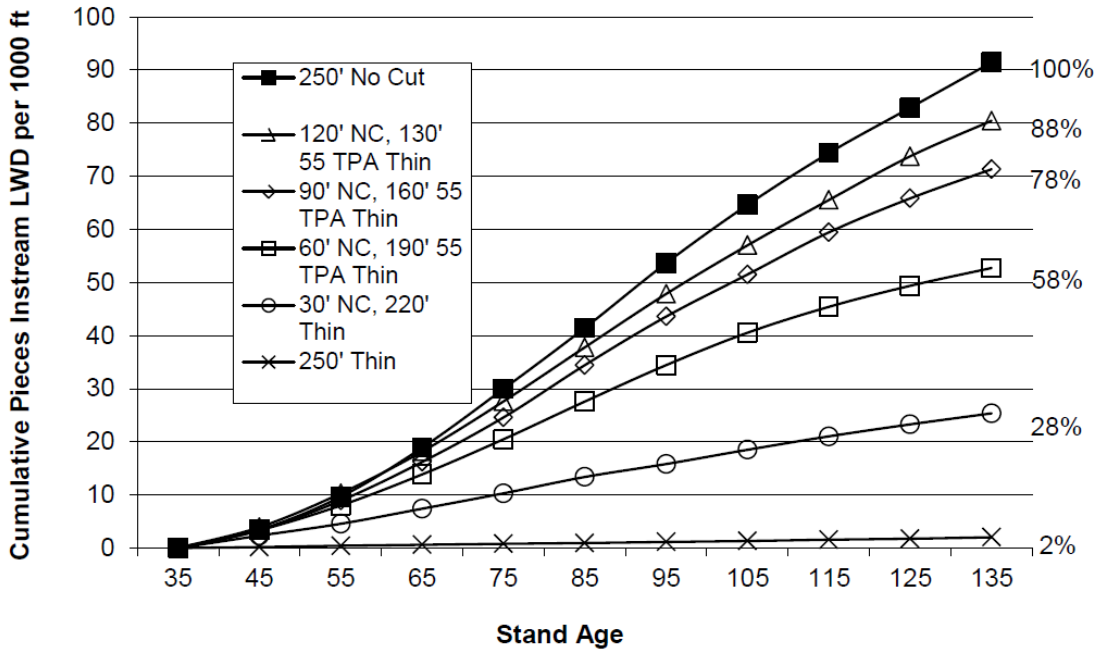

Figure 11. *Comparison of the modeled effect of various no-cut buffer width adjacent to a 55 TPA thin on cumulative large wood inputs from the modeled stand to a stream for 100 years post thinning for a young, managed Douglas-fir stand in northwest Oregon. Percentages on the right of figure are relative to a 250 foot no cut buffer, a width equal to the site potential tree height for the area. Forest growth was simulated using Organon and wood inputs were simulated using Streamwood. Stand data used in the simulation were provided by the Siuslaw National Forest and are included in their East Alsea Landscape Management Plan. The pre- and post-thin tree size and density is typical of the stands in the project where thinning is proposed. (Figure from Pollock et al., in preparation). The range of no-cut buffer widths and thinning regime examined are for comparative purposes only and is not meant to imply that they are all appropriate for meeting ACS objectives. Note also that the simulation does not predict the total amount of wood that will be in the stream, because it does not include existing instream wood loads, wood losses due to downstream transport, and wood delivery from upstream sources and from stands on the opposite bank, It simply predicts the relative effect of different management options on the delivery of instream wood from a stand.*

The available scientific evidence indicates that the 120' ft. no cut buffer be extended for intermittent streams because this would result in 88% of wood recruitment compared to 250' no

cut buffer. *See* figure 11 above. BLM has failed to explain its decision not to do so in light of this evidence.

The State Director's decision to "allow yarding corridors, skid trails, road construction, stream crossings, and road maintenance and improvement where there is no operationally feasible and economically viable alternative to accomplish other resource management objectives" is arbitrary and contrary to law, FEIS/PRMP at 1117.

All of these activities except for road maintenance and improvement would co-opt the purpose of the PRMP to recover ESA listed species and provide clean water for the sake of economic expediency. Clean water must not be traded off for stream polluting activities such as yarding corridors, skid trails, road construction and stream crossings within and adjacent Riparian Reserves.

We provide the following conservation actions for inclusion in the anticipated ROD to assure that the BLM is compliant with the ESA and Clean Water Act. Our rationale is that the principal purpose of Riparian Reserves is to protect and restore water quality to streams. Roads and logging activities are the principal sources of fish killing sediment pollution that must be aggressively controlled within and adjacent Riparian Reserves. For each existing or planned road, meet Riparian Reserve management objectives by:

a. Minimizing road and landing locations in Riparian Reserves;

b. Completing appropriate geotechnical analyses prior to construction of new roads or landings in Riparian Reserves;

c. Prepare road design criteria, elements, and standards that govern construction and reconstruction;

d. Prepare operation and maintenance criteria that govern road operation, maintenance, and management;

e. Minimize disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow;

f. Restricting sidecasting as necessary to prevent the introduction of sediment to streams;

g. Avoid wetlands entirely when constructing new roads;

h. Determine the influence of each road on Riparian Reserve management objectives;

i. Reconstruct roads and associated drainage features that pose a substantial sediment risk;

j. Prioritize reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources affected;

k. Close, stabilize, or obliterate roads based on the ongoing and potential effects to Riparian Reserve objectives with consideration of short-term and long-term transportation needs;

New culverts, bridges and other stream crossings shall be constructed, and existing culverts, bridges and other stream crossings determined to pose a substantial risk to riparian conditions will be improved, to accommodate at least the 100-year flood, including associated bedload and debris.

Priority for upgrading will be based on the potential impact and the ecological value of the riparian resources affected and not on economic expediency to facilitate timber harvest. Crossings will be constructed and maintained to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure (i.e., stream diversion).

Minimize sediment delivery to streams from roads. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is unfeasible or unsafe. Route road drainage away from potentially unstable channels, fills, and hillslopes.

Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams. This includes adult lamprey passage on 4th order streams and larger.

Develop and implement a Transportation Management Plan that will meet Riparian Reserve objectives. As a minimum, this plan shall include provisions for the following activities:

a. inspections and maintenance during storm events.

b. inspections and maintenance after storm events.

c. road operation and maintenance, giving high priority to identifying and correcting road drainage problems that contribute to degrading riparian resources.

d. traffic regulation during wet periods to prevent damage to riparian resources.

e. establish the purpose of each road.

The State Director's decision to allow fuels treatments in dry Riparian Reserves and to cut trees up to 12" DBH is wrong. FEIS/PRMP at 1125. Trees greater than 6" diameter, especially broad leaved trees, do not contribute much to fire hazard and should be allowed to grow to maturity. For example, mature tanoak has been found to repress fire intensity and protect large conifers from fire. Cutting trees 6"-12" diameter will create huge amounts of slash and

excessive numbers of burn piles that damage soils. The available scientific evidence indicates that fuels treatment within riparian reserves should not cut trees >6" DBH, especially broad leaved trees. This evidence also indicates that fuels treatments in Riparian Reserves must prohibit the cutting of valuable riparian species such as maple, alder, dogwood, ash, cottonwood, willow, California bay, elderberry and others. These riparian species are relatively uncommon compared to flammable small conifers and must be retained. BLM's failure to do so without analysis or explanation is arbitrary.

The State Director's omission to require each district to make substantial reductions of road and trail related sediment on an annual basis is wrong. The FEIS is wrong because it failed to disclose the ongoing degradation of stream habitat due to sediment pollution and its serious adverse effect on ESA listed coho salmon. The FEIS is wrong because it failed to alert the State Director about the continuing loss of viability of SONNC coho on planning area and decision area lands.

Since about 2012, Medford District Resource Areas and perhaps other districts have stopped identifying road decommissioning and/or the storm proofing of roads within large-scale vegetation projects that emphasize timber harvest as the singular "purpose and need". Prior to this time, road decommissioning, storm proofing and road closures were routinely incorporated into landscape vegetation projects that emphasized timber harvest. Road related sediment reduction was listed as a purpose and need. As a result of this policy change to exclude road decommissioning and restoration from timber projects, in 2014 the Medford District initiated no road miles for road restoration/decommission while initiating 11 timber sales projects. Table 13 below is excerpted from the Fiscal Year 2014 Medford District Annual Program Summary and Monitoring Report.

Table 13. Projects Initiated in Fiscal Year 2014 by Resource Area

Project Type	Resource Area				District	District Total
	Ashland	Butte Falls	Grants Pass	CSNM*		
Timber Sale	7	2	2	0	0	**11**
Silviculture	0	2	1	1	0	**4**
Riparian/Fish Habitat	3	1	3	0	1	**8**
Mining	0	0	2	0	0	**2**
Prescribed Burns/ Fuel Hazard Reduction	0	3	0	0	0	**3**
Road Restoration/ Decommission	0	0	0	0	0	**0**
Road Construction	0	0	1	0	0	**1**
Grazing	0	0	0	0	0	**0**
Recreation	2	0	4	1	1	**8**
Other	6	7	7	3	2	**25**
Total	**18**	**15**	**20**	**5**	**4**	**62**

*Cascade-Siskiyou National Monument

Although PRMP Management Direction, FEIS/PRMP at 1134, says to "[i]mplement road improvements, storm proofing, maintenance, or decommissioning to reduce or eliminate chronic sediment inputs to stream channels and waterbodies" this direction has been and can be ignored indefinitely while the Districts exclusively pursue timber sale ASQ volumes in EA documents by narrowing the purpose and need to producing timber volume. The PRMP will codify this policy by requiring districts to offer for sale the Allowable Sale Quantity of timber, FEIS/PRMP at 1106, and requiring the Medford District to thin 17,000 acres of LSR, FEIS/PRMP at 1116, but there is no requirement to initiate projects for a specified number of road miles each year in each district. Thus, the Medford District can continue to ignore management direction for reducing road and motorized trail related sediment indefinitely with no repercussions or accountability. Timber harvest moves forward annually while road related sediment abatement languishes. This result is contrary to law and arbitrary.

The ROD must direct each District to annually meet substantial numeric targets for reducing road related sediment primarily where coho salmon are being adversely affected. The ROD would direct the districts to focus sediment reduction in specific Class I 6th field watersheds where NMFS and ODFW believe it would do the most good for coho salmon and other imperiled aquatic species. Although the common practice of decommissioning unneeded roads is necessary, FEIS/PRMP at 1134, this approach is not sufficient to have much benefit for ESA listed fishes. Roads required for reciprocal agreements would be "disconnected" from the stream system.

The PRMP identifies modeled forest management acres in the Harvest Base as reporting targets, FEIS/PRMP at 1825. The PRMP does not include road related sediment reduction targets for priority 5th and 6th field watersheds that contain critical coho salmon habitat. Reporting would be miles of system road storm proofed, miles disconnected from the stream system and miles decommissioned. Similar reporting would be for miles of 'routes' that are causing sediment pollution (e.g., user created routes, abandoned logging roads, mining roads). The current PRMP approach to road related sediment reduction appears to be voluntary. This is not acceptable for the huge backlog of sediment producing roads in the planning area. Targets for road related sediment reduction in priority watersheds (not districts) must be established and met or exceeded in order to meet the stated purpose and need for the PRMP and applicable law. These road mile targets would be in addition to ongoing maintenance and BMPs generally conducted in association with timber harvest and log haul.

The FEIS is wrong because it grossly underestimates road related sediment impacts to listed fishes. The analysis misleads the State Director about the extent and seriousness of degraded streambed conditions of class 1 watersheds due to road related sediment. The statements in the FEIS that road related sediment has only local effects or is harmlessly flushed from the stream system is conjecture and not based on the best available science (See the FEMAT and our comment letter for science based analysis of sediment). The PRMP seems to rely entirely on BMPs for sediment control. While BMPs are necessary they are not sufficient to make significant reductions in road related sediment. Sediment from logging and roads is

repeatedly identified by NMFS as a threat to SONCC coho in the SONNC recovery plan yet the PRMP fails to require needed recovery actions to foster clean water and the recovery of SONNC coho salmon. Research has shown that adult coho numbers are positively correlated with reduced road densities. The PRMP does not meet its purpose and need with respect to reducing sediment pollution from roads.

The FEIS is also wrong in claiming that SONNC coho salmon in the Medford District are stable or status unchanged. Huntley Park coho salmon counts show declines since 2004 indicating no sustained improvement of freshwater habitat. Coho counts at Huntley Park in 2015 were only 20% of the ten year average indicating continued failure of fresh water habitat to produce adequate numbers of smolts. Substantial reductions of road related sediment in high priority 6th field watersheds is needed to improve spawning and rearing habitat, contribute to coho recovery and meet the purpose and need of the PRMP. Figure 1-1 below is excerpted from final SONCC coho recovery plan. Huntley Park counts since 2010 available at http://www.dfw.state.or.us/fish/fish_counts/rogue_river/index.asp

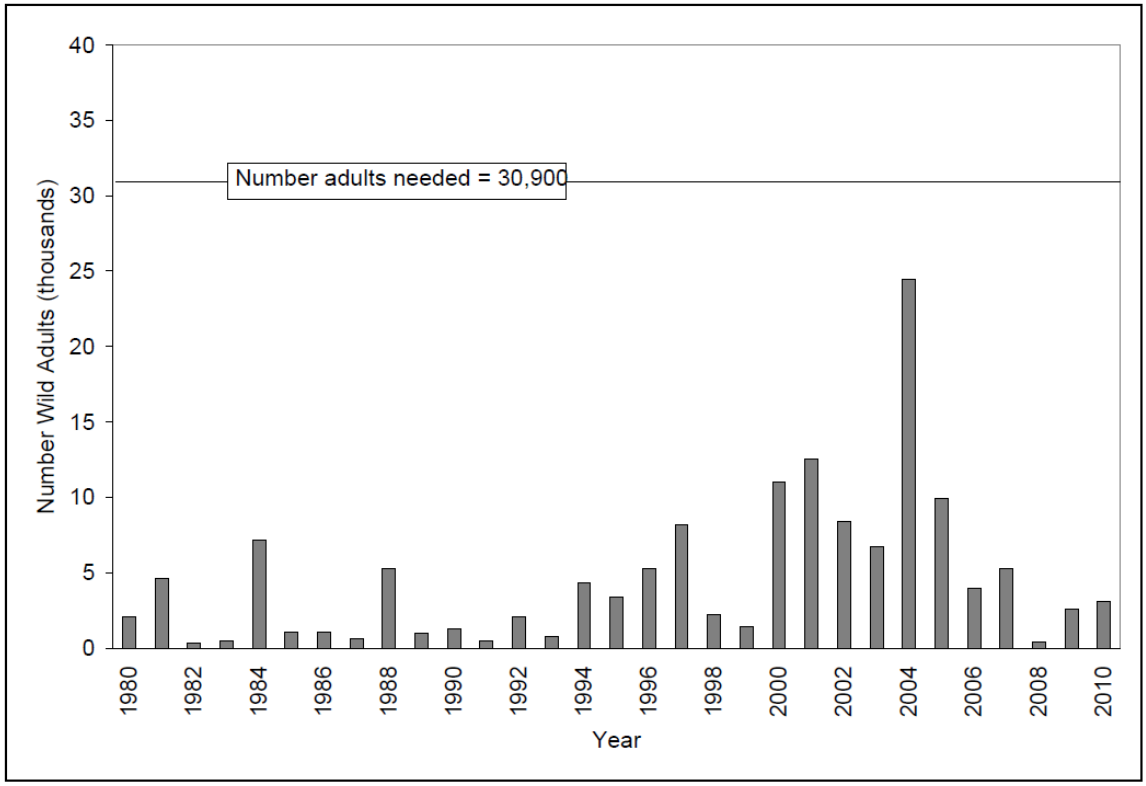

Figure 1-1. Estimates of the run size of wild Rogue basin coho salmon past Huntley Park, 1980-2010 (Oregon Department of Fish and Wildlife [ODFW] 2012), compared to number needed from Rogue River for ESU recovery.

The State Director is wrong for not identifying some priority one 6th field watersheds for timber harvest deferral due to cumulative watershed affects. The State Director is wrong for not

identifying cumulative effects thresholds for timber harvest and road building for 6th field watersheds. Continued timber harvest and road construction in severely disturbed watersheds will not meet the purpose and need to contribute to recovery of listed fish species or ensure clean water, results that are contrary to law.

The FEIS limited cumulative effects analysis to projections about increased peak flows due to forest clearing in the transient snow zone. While peak flow analysis is necessary, this is not adequate to detect watershed scale degradation due to excessive road building and clear-cutting on mixed ownership lands. Watersheds with sensitive decomposed granitic soils are especially vulnerable to cumulative sediment impacts. For example tributaries of Evans Creek have apparently deteriorated further than what was reported for the 1995 RMP "timber deferral". Medford District Fisheries biologist Chris Volpe reported to R. Nawa (KSWild) that a former deep pool on a tributary of Evans Creek has unexplainably filled with sediment suggesting watershed scale impacts. Mr. Volpe informed R. Nawa (KSWild) on March 16, 2016 that cobble embeddedness measurements from the mid-1990s on Kane Creek now show severe sedimentation indicating downward trend.

The PRMP erroneously assumes that every watershed can always take on additional ground disturbance, canopy reduction, and road construction on public lands regardless of previous cumulative impacts at the watershed scale. Commonly applied analysis at 5th field scale may not detect that thresholds have been exceeded, but analysis at 6th field may reveal that some watersheds are at or near thresholds for acceptable amounts of disturbance. Since coho salmon typically spawn and rear in 6th field watersheds, the 6th field scale (12th field HUC) is also appropriate for assessing thresholds for disturbance. PRMP assertions that BMPs can mitigate for any scale of timber harvest disturbance is not scientifically credible, PRMP/FEIS at 1134. Pre-project analysis could show that recent large-scale private land logging has exceeded commonly accepted thresholds for watershed disturbance and thus trigger a deferral of timber harvest on adjacent BLM lands. In order to comply with the law, the ROD must identify cumulative watershed analysis techniques and standards that would provide for a temporary timber harvest deferral to safeguard water quality and ESA listed fish (i.e., provide an analysis mechanism to give severely disturbed or sensitive watersheds a decade or so to demonstrate recovery).

The State Director's failure to recommend a mineral withdrawal of Riparian Reserves containing SONCC coho salmon critical habitat is wrong. FEIS/PRMP at 1145. Historic and ongoing mining within Riparian Reserves is a threat to coho salmon and hinders needed stream restoration. The BLM recently proposed a massive withdrawal to protect the sage grouse which is not a listed species. The same protection is merited by federally listed SONCC coho salmon where spawning habitat is harmed by mining. Placer mining on terraces and floodplains can destroy riparian forests, alter hydrology and make streams vulnerable to containment pond breeches. Requirements for Section 7 consultation do not necessarily prevent harmful mining within and adjacent critical coho salmon habitat as demonstrated by the construction of Reelfoot Mining pit within a side channel of Sucker Creek (photo below). The mining law as

implemented by the Medford District is not compatible with purpose and need of the RMP to contribute to the recovery of listed species and provide clean water. Mineral withdrawal of existing 2 tree riparian reserves, floodplains, and terraces is warranted to contribute to the recovery of listed species and provide clean water.

Although state laws have been enacted to temporarily stop small-scale suction dredging on BLM lands, the PRMP cannot piggy-back onto state law. In addition, the state law is temporary. The ROD needs to provide a long term solution to mining conflicts with ESA listed fish through mineral withdrawal that can be federally enforced.

Medford District BLM approved this mining operation that harmed coho salmon critical habitat in a side channel adjacent to Sucker Creek. Consultation procedures identified in PRMP are not adequate for protecting coho salmon critical habitat because BLM routinely decides that mining operations such as Reelfoot NOI have no impact on listed species. August 2009.

Each year large areas of critical coho salmon spawning habitat are mined. State laws and federal section 7 consultation are ineffective and the PRMP does not address or correct this problem. The State Director also was wrong for not conducting section 7 consultation for ongoing suction dredging for this PRMP decision. FEIS/PRMP at 1144. The management direction for mining in critical habitat is not adequate. FEIS/PRMP at 1144. BLM currently has no prohibitions on mining that harms coho spawning habitat. Thus, there needs to be section 7 consultation on mining whether it is "proposed" or not. Suction dredgers typically do not "propose" small scale dredging to BLM. It's doubtful if many will comply with BLM's stated requirement to contact BLM prior to small scale dredging, as they have not had to contact BLM in the past. In the past hundreds of dredgers have gotten state permits to dredge in BLM critical coho habitat on a large scale with no BLM notification (i.e., casual use). Recently enacted state law may reduce casual use dredging in critical habitat for a few years but dredging will likely resume when the law terminates.

The typical 4-inch dredge has been viewed as "casual use" by BLM requiring no BLM oversight. Since dredging with 4 inch dredges is certain to occur in the foreseeable future (e.g., summer 2016 and beyond), the BLM must consult with NMFS about any motorized dredging prior to issuing a ROD in order to identify mitigations for "casual use dredging", including a prohibition of such dredging in critical habitat. A failure to consult would be a violation of ESA section 7.

The State Director's omission to require Medford District and Klamath Falls Resource Areas to develop substantial protections of riparian reserves from livestock grazing impacts is wrong. The FEIS is wrong because it failed to adequately disclose the ongoing degradation of stream habitat due to livestock grazing and its serious adverse effect on ESA listed coho salmon (Medford District) and to a lesser extent adverse grazing impacts on ESA listed shortnose sucker (Klamath Falls Field Office). The PRMP is wrong because it has not made any changes in allotments to address conflicts with riparian reserves, listed fishes and water quality (Appendix

L). The PRMP is wrong because it does not require adjustments or elimination of grazing practices that retard or prevent attainment of riparian reserve objectives.

The FEIS is wrong to limit management standards in riparian reserves to only provide for shade and large wood. Limiting considerations for riparian reserves to potential wood inputs and shade arbitrarily compromises the stated purpose and need for recovery of [all] ESA listed species and clean water from watersheds. For example, since NSO habitat is of no consideration for riparian reserves the PRMP provides for removal of NSO habitat by thinning the outer Riparian Reserve to 60 TPA and 30% canopy. This narrow, arbitrary 2 parameter approach for riparian reserves is contrary to all scientific advances in wildlife/fisheries management that seeks to integrate species management and avoid single species management (i.e., ecosystem management on which the No Action is based, see also the FEMAT publication). The purported 2 parameters for riparian reserves (wood and shade) do not fully meet the needs of ESA listed fishes because sediment filtering, nutrient filtering and durability in the face off floods, fires, and windstorms are ignored, ostensibly because they are difficult to model. There is no easy remedy for this conceptual error that was obviously crafted to provide increased ASQ timber harvest from former riparian reserves and an excuse to dismiss the needs of wildlife such as northern spotted owls, fishers, western pond turtles, red tree voles, flying squirrels marbled murrelets and amphibians, to name a few. The FEIS provides no scientific basis for its radical departure from the NWFP that has proven to be effective in restoring habitat for fish and wildlife across all land use allocations. A supplemental EIS should be prepared that integrates the purpose and need parameters into all land use allocations as is provided in the no action alternative (i.e., ecosystem management as described in FEMAT publication).

C. <u>BLM Failed to Consider the Benefits of Wide Riparian Reserves for Marbled Murrelets</u>

In Response to Comments 325, FEIS/PRMP at 1978, BLM claims that "Under … the Proposed RMP, the Late-Successional Reserve is larger than under the No Action alternative (i.e., the Northwest Forest Plan), providing increased benefits to the marbled murrelets." This is misleading because the PRMP includes two big changes that reduce protections for marbled murrelets: First, cutting riparian reserves in half will adversely affect murrelets that disproportionately use riparian reserves. Reducing stream buffers will increase logging and fragmentation of murrelet habitat. This will increase murrelets exposure to nest predation and limit recovery opportunities in landscape positions that have high recovery potential. Second, eliminating the 80 year age limit on logging in LSR in moist provinces allows increased logging in LSRs that will degrade habitat for marbled murrelets by exposing them to various threats, including especially nest predators.[69]

[69] In addition, by reducing marbled murrelet buffers from ½ miles under the NWFP to 300 feet under the FEIS/PRMP, the PRMP will cause additional harm t murrelets without scientific justification or explanation.

By halving riparian reserves and by eliminating protection for stands over 80 years old in LSRs, BLM fails to meet the recommendations of the marbled murrelet Recovery Plan. After reading the standards & guidelines in Appendix B, it is clear that NO PART of the Late Successional Reserves are really off-limits to logging. If it's not suitable habitat, BLM can log to accelerate owl habitat. In nesting, roosting, foraging habitat, BLM can log down to 60% canopy cover even if it degrades habitat. In high-quality RA32 habitat, BLM can log for roads, yarding corridors, hazard trees, and fuel and insects, even if it degrades or removes habitat. The PRMP thus proposes a variety of loopholes for logging in LSRs which would be adverse to marbled murrelets, but the 1997 Marbled Murrelet Recovery Plan says:

> On April 13, 1994, The Secretary of Agriculture and the Secretary of Interior signed a Record of Decision (ROD) adopting Alternative 9 of the President's Forest Plan (U.S. Department of Agriculture and U.S. Department of the Interior 1 994b). This is an ecosystem approach to management of Late-Successional Forests and their associated species within the range of the northern spotted owl. Marbled murrelets and their nesting habitat on Federal lands are specifically considered in this plan. … (p 87-88)
>
> …
>
> The short-term actions are critical because of the length of time necessary to develop most new nesting habitat (100-200 years). They should be factored into decisions on which areas should be secured and how habitat (both terrestrial and marine) should be maintained or improved. (p 121)
>
> …
>
> Consistent with the Forest Plan Record of Decision, thinning within Late-Successional Reserves should be restricted to stands younger than 80 years.... 3.2.1.2 Protect 'recruitment' nesting habitat to buffer and enlarge existing stands, reduce fragmentation, and provide replacement habitat for current suitable nesting habitat lost to disturbance events. Stands (currently 80 years old or older) that will produce suitable habitat within the next few decades are the most immediate source of new habitat and may be the only replacement for existing habitat lost to disturbance (e.g., timber harvest, fires, etc.) over the next century. Such stands are particularly important because of the vulnerability of many existing habitat fragments to fire and wind and the possibility that climate change will increase the effects of the frequency and severity of natural disturbances. Such stands should not be subjected to any silvicultural treatment that diminishes their capacity to provide quality nesting habitat in the future. Within secured areas, these "recruitment" stands should not be harvested or thinned." (page 143)

Maintaining consistency with the 1997 Recovery Plan for the Marbled Murrelet requires BLM to maintain the existing protected areas, including wider riparian reserves, and ensure adequate

protection of those protected areas. Shrinking riparian reserves and eliminating the 80-year limitation in LSRs is inconsistent with BLM's duties under the Endangered Species Act.

BLM violates the Endangered Species Act by failing to conserve habitat for marbled murrelet as recommended in the recovery plan, e.g., BLM must close the loopholes for logging in LSRs and riparian reserves and limit logging within the range of the marbled murrelet to stands less than 80 years old.

The Response to Comments, FEIS/PRMP at 1978, say "more of the current marbled murrelet nesting habitat would be within reserve land use allocations under the action alternatives and the Proposed RMP," but BLM failed to recognize that the riparian reserves were intended to grow more habitat for marbled murrelets, and by radically reducing stream buffers, BLM is foregoing the opportunity to grow additional murrelet habitat near streams where they need it most. Public comments referenced (and attached) a white-paper that explained why wide riparian reserves are important for marbled murrelets. Heiken (2013) said:

> Through the establishment of riparian reserves, the NWFP sought to achieve diverse conservation purposes (e.g., not just water quality; not just fish conservation):
>
> …
>
> The NWFP Record of Decision adopted Riparian Reserve Scenario 1 with the explicit intention to benefit: spotted owls, marbled murrelets, marten, red tree vole,[70] …
>
> …
>
> - protecting and restoring habitat and dispersal/connectivity opportunities for a wide variety of terrestrial species associated with late successional forest, including explicitly, spotted owls and marbled murrelets.[71]
>
> …
>
> The primary reasons for adoption of Riparian Reserve Scenario 1 (instead of Scenario 2) were that:
>
> …

[70] 1994 FSEIS, Appendix B-11, p B-143 -145.
[71] 1994 ROD p B-13.

- Wider buffers would benefit terrestrial wildlife and improve species viability ratings, including for spotted owls, marbled murrelets, and many other species such as those on the survey and manage list.[72]

… Two of these benefited species - the spotted owl and marbled murrelet - were already listed as "threatened" under the ESA when the NWFP was approved.

…

Riparian Reserves are Important for Marbled Murrelets. Marbled murrelets are a "threatened" seabird that nest on large mossy limbs of mature and old-growth trees located within about 50 miles of the coast. Like spotted owls, marbled murrelets also depend disproportionately on lower slopes and riparian forests. FWS' 1997 Recovery Plan for the Marbled Murrelet says "With respect to slope, eighty percent of nests in the Pacific Northwest were located on the lower one-third or middle one-third of the slope."[73] Hamer and Nelson (1995) show that the mean distance to streams from marbled murrelet nests in the Pacific Northwest is 159 meters.[74]

In California, Baker et al. (2006) found that marbled murrelet nest sites "were located closer to streams, had a greater basal area of trees >120 cm dbh, and were located lower on slopes than random sites based on analysis of variance models." Baker (2006) states:

> We found that nest sites were much closer to streams than would be expected based on randomly available sites within old-growth forests. Nest sites may have been located near streams because these sites afforded murrelets better access from at-sea flyways. Studies have found proximity to streams or other openings to be important for murrelet nesting in other regions as well (Hamer and Nelson 1995, Meyer et al. 2004, Zharikov et al. 2006).[75]

In British Columbia Burger & Chatwin (2002) found that "[f]orests bordering major stream channels provided high quality nest habitat for murrelets, with large

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[72] 1994 FSEIS, Appendix J2; 1994 FSEIS, Appendix B11, pp B-143 – B-145. Martin Raphael. 2012. The Function of Riparian Reserves for Terrestrial Species – What Was the Intent? http://ecoshare.info/wp-content/uploads/2013/01/Raphael-buffers.pptx

[73] USFWS 1997. Marbled Murrelet Recovery Plan, p 32. http://ecos.fws.gov/docs/recovery_plans/1997/970924.pdf

[74] Thomas E. Hamer & S. Kim Nelson. 1995. Chapter 6: Characteristics of Marbled Murrelet Nest Trees and Nesting Stands. USDA Forest Service Gen. Tech. Rep. PSW-152. 1995. http://www.fs.fed.us/psw/publications/documents/gtr-152/chap6.pdf.

[75] Baker, L.M., Peery, M.Z., Burkett, E.E., Singer, S.W., Suddjian, D.L., And S.R. Beissinger. 2006. Nesting Habitat Characteristics of the Marbled Murrelet in Central California Redwood Forests. The Journal of Wildlife Management (70(4) 939-946. https://www.cnr.berkeley.edu/beislab/BeissingerLab/Steve'%20Publications/Baker_et_al_2006.pdf

> trees, high epiphyte cover and many potential nest platforms. Detections of murrelets were also highest along stream beds …"[76]
>
> Increased regen harvest within riparian reserves is in direct conflict with FWS' 1997 Recovery Plan for the Marbled Murrelet which recommends that mature forests within "secured areas" (such as riparian reserves) be protected so they can serve as future nesting habitat for the marbled murrelet.[77] This recovery plan recommendation is not about *existing* high quality habitat, but about mature forests that can serve as future recruitment habitat. These 80-120 year-old maturing forests are precisely those targeted for logging in many recent policy proposals, such as the BLM Secretarial Pilots,[78] and the federal legislation proposed by Representatives DeFazio, Walden, and Schrader.[79] …

An appendix to the NWFP EIS explained some of the reasons that the current boundaries of riparian reserve were adopted and the process for possible adjustments:

> The following standards and guidelines were developed in response to public and internal comments to increase protection of habitat for species whose habitat assessments were relatively low under Alternative 9.
>
> …
>
> Riparian Reserve Scenario 1 will be applied on intermittent streams throughout the range of the northern spotted owl. … [T]he prescribed Riparian Reserve widths for intermittent streams may be adjusted in decisions following watershed analysis. That analysis should take into account all species that were intended to be benefited by this standard and guideline. Those species include fish, mollusks, amphibians, lichens, fungi, bryophytes, vascular plants, American marten, red tree voles, bats, marbled murrelets, and northern spotted owls. The specific issue for spotted owls is retention of adequate habitat conditions for dispersal. … [R]iparian protection in Adaptive Management Areas should be comparable to that prescribed for other federal land allocations. However, in those cases where

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[76] Burger, A.E., and T.A. Chatwin. 2002. Multi-scale studies of populations, distribution and habitat associations of Marbled Murrelets in Clayoquot Sound, British Columbia. Ministry of Water, Land and Air Protection Victoria, BC. March 2002. http://env.gov.bc.ca/wld/documents/techpub/mamuwebs.pdf

[77] USFWS 1997. Recovery Plan for the Marbled Murrelet. http://ecos.fws.gov/docs/recovery_plans/1997/970924.pdf

[78] Oregon Wild 2011. Scoping Comments on the Wagon Road and Roseburg BLM Secretarial Pilots. http://www.oregonwild.org/oregon_forests/forest-management/in-your-forests/files-for-eyes-on-the-agencies/Wagon_Road_and_Roseburg_Pilots_scoping_6-29-2011_BLM.pdf

[79] Oregon Wild 212. Problems and Pitfalls Associated with the Proposed "O&C Trust, Conservation, and Jobs Act" Version 1.3, June 5, 2012. http://www.oregonwild.org/oregon_forests/old_growth_protection/westside-forests/western-oregon-s-patchwork-public-lands/O-C_Trust_Act_White_Paper_FINAL_6-5-2012_w_DeFazio_response.pdf

> alternate means are proposed to meet riparian objectives, those alternate means must meet objectives for management of all species. In areas where there are concerns about species as noted above, species protection takes priority over any objectives that would reduce reserves, and adjustments to Riparian Reserves should take into account all species that were intended to be benefited by this standard and guideline.[80]

Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

BLM has not offered a rational explanation for its decision to reduce riparian reserves in the FEIS/PRMP in light of the above and other scientific evidence, nor has it explained how its actions comply with its duties under the ESA and other laws.

D. BLM Failed to Consider the Benefits of Wide Riparian Reserves for Northern Spotted Owls

BLM failed to take a hard look at the value of conserving wide riparian reserves for spotted owls and the adverse effects of shrinking riparian reserves. The 2011 Revised Recovery Plan for the Northern Spotted Owl showed that "slope position" was an important variable in the all the models used to predict spotted owl habitat suitability. Slope position seems to be relatively more important in the warmer provinces, which indicates that as the climate warms protecting lower slopes will likely be increasingly important in all provinces. *See* Appendix C of the U.S. Fish and Wildlife Service, Revised Recovery Plan for the Northern Spotted Owl (*Strix occidentalis caurina*) (2011) (U.S. Fish and Wildlife Service, Portland, Oregon xvi + 258 pp.).

Public comments set forth a detailed explanation of why wide riparian reserves are disproportionately valuable for spotted owls and why they should continue to be conserved as the Northwest Forest Plan intended. As these comments and Heiken (2013) explain:

> Through the establishment of riparian reserves, the NWFP sought to achieve diverse conservation purposes (e.g., not just water quality; not just fish conservation):
>
> …
>
> The NWFP Record of Decision adopted Riparian Reserve Scenario 1 with the explicit intention to benefit: spotted owls, marbled murrelets, marten, red tree

[80] 1994 FSEIS, Appendix B-11, p B-143 -145 (emphasis added).

vole,[81] …

…

protecting and restoring habitat and dispersal/connectivity opportunities for a wide variety of terrestrial species associated with late successional forest, including explicitly, spotted owls and marbled murrelets.[82]

…

The primary reasons for adoption of Riparian Reserve Scenario 1 (instead of Scenario 2) were that:

…

Wider buffers would benefit terrestrial wildlife and improve species viability ratings, including for spotted owls, marbled murrelets, and many other species such as those on the survey and manage list.[83]

… Two of these benefited species - the spotted owl and marbled murrelet - were already listed as "threatened" under the ESA when the NWFP was approved.

…

Riparian Reserves Contribute Disproportionately to Spotted Owl Conservation

The NWFP represents the "federal contribution to recovery" of the threatened northern spotted owl.[84] The NWFP relies on riparian reserves to provide benefits to spotted owls, including dispersal, connectivity, and demographic support. Reeves et al. dismiss the need to maintain riparian buffers for spotted owls because FWS' final critical habitat rule did not specifically incorporate riparian reserves. A more thorough review of the evidence shows that riparian reserves are critically important for spotted owls, and increasingly so in light of new threats like the barred owl and climate change.

The 1994 Record of Decision for the NWFP explained the role of riparian reserves in conservation of spotted owls:

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[81] 1994 FSEIS, Appendix B-11, p B-143 -145.
[82] 1994 ROD p B-13.
[83] 1994 FSEIS, Appendix J2; 1994 FSEIS, Appendix B11, pp B-143 – B-145. Martin Raphael. 2012. The Function of Riparian Reserves for Terrestrial Species – What Was the Intent? http://ecoshare.info/wp-content/uploads/2013/01/Raphael-buffers.pptx
[84] 1994 ROD p 15.

> Mitigation Measures Adopted … The standards and guidelines of the selected alternative mitigate the impacts to plant and animal species and their interrelated ecosystems. The standards and guidelines for the land allocations of this decision will improve current conditions and alter certain past practices detrimental to late-successional species by protecting large blocks of remaining late-successional and old-growth forests, and by providing for the regrowth and replacement of previously harvested late-successional forest stands. …
>
> … riparian reserves in particular mitigate timber harvest effects by providing for well distributed patches of late-successional forest that serve for dispersal of mobile species such as the northern spotted owl, and serve as refugia for species that disperse only short distances.
>
> … Another possible mitigation is that the rate of timber harvest in the matrix could be controlled (such as with the 50-11-40 rule) to provide additional dispersal habitat for spotted owls. This measure was not adopted, in part, due to the acreage of late-successional and other reserves well-distributed in the matrix … this will protect larger amounts of nesting, roosting, and foraging owl habitat, which will be higher quality than what the 50-11-40 rule would have done (see Appendix G, part 3 of the Final SEIS).[85]

A careful review of the available evidence shows that riparian reserves provide disproportionate value to spotted owls and they represent an integral part of the spotted owl conservation strategy adopted in 1994. New evidence reinforces the importance of riparian reserves.

Contrary to Reeves et al.'s assertions, the critical habitat rule and the recovery plan explicitly recognize the role of riparian reserves in owl conservation. FWS's 2012 proposed rule for revised critical habitat said "Riparian Reserves, Adaptive Management Areas and Administratively Withdrawn Areas can provide both demographic support and connectivity/dispersal between the larger blocks, but are not necessarily designed for that purpose."[86] And FWS's 2011 Revised Recovery Plan states:

> Riparian Reserves, Adaptive Management Areas and Administratively Withdrawn Areas can provide both demographic support and connectivity/dispersal between the larger blocks, but are not necessarily

[85] 1994 NWFP ROD p 29-31.

[86] USFWS 2012. Proposed rule- Revised Critical Habitat for the Northern Spotted Owl. Federal Register Jun 1, 2012. http://www.gpo.gov/fdsys/pkg/FR-2012-06-01/html/2012-13305.htm

> designed for that purpose. … Apparently in response to barred owls, some marked spotted owl site centers have moved higher up slopes (Gremel 2005). According to one study, "the trade-off for living in high elevation forests could be reduced survival or fecundity in years with severe winters (Hamer et al. 2007:764).[87]

Spotted owls spend disproportionate time in riparian areas and on the lower third of slopes. Robert Anthony recently provided input to an interagency process regarding thinning in riparian reserves and noted that spotted owls are associated with riparian areas, and that logging has negative effects on spotted owls and their prey:

> Northern spotted owls are also associated with riparian areas, which is relevant to thinning of young forests in these areas (McDonald et al. 2006, Glenn et al. 2004). The association with riparian areas has been determined with the use of radiotelemetry studies of their movements and habitat use, which have shown that owls use riparian areas more than their proportional availability across the landscape. There have been at least three hypotheses proposed for the disproportionate use of riparian areas: (1) riparian areas provide more favorable thermoregulatory conditions (Barrows 1981); (2) prey species are more abundant in riparian areas (Carey et al. 1992 1999); and (3) fire severity has been lower in riparian areas resulting in the retention of structural complexity (Reeves et al. 2006). There is some support for all three of these hypotheses so they all likely have some influence over the use of riparian areas by northern spotted owls.
>
> … [M]any of the forest management practices (i.e., clearcuts, shelterwood cuts, heavy commercial thinning) used in the Pacific Northwest have had negative effects on spotted owls (Forsman et al. 1984, Zabel et al. 1995, Buchanan et al. 1995, Hicks et al. 1999, Meimann et al. 2003).
>
> … [I]t is safe to say that commercial thinning within the range of the northern spotted owl will have a negative effect on abundance of northern flying squirrels. Northern flying squirrels are the owl's primary prey by number and biomass throughout most of their range; consequently, there is little doubt that commercial thinning will have a negative effect on abundance of flying squirrels as prey for spotted owls. In addition, commercial thinning has negative effects on the abundance of red-backed voles (Suzuki and Hayes 2003, Manning unpublished data), which is also

[87] USFWS 2011. Final Revised Recovery Plan for the Northern Spotted Owl. pp A-14, B-11.

an important prey species for the owl.[88]

The contractor's report supporting FWS' 2004 status review of the spotted owls found "owl locations were positively associated with proximity to riparian habitat …."[89] The SEI Report also said, "In the Klamath Province, more nests than random sites were on the lower third of slopes … "[90] Blakesly et al. (1992) found similar results in California: "Spotted owls also selected the lower third of slopes, used the middle third of slopes in proportion to their availability, and used the upper third of slopes less than expected …"[91]

Riparian stands may be particularly important to spotted owls in areas where old forests are uncommon, such as the BLM checkerboard of western Oregon. Glenn et al. (2004) said:

> [N]est sites for owls at NCR [Northern Coast Range] and ESF [Elliot State Forest] generally were located within mature/old conifer forest or along conifer–broadleaf edges associated with riparian areas. … In areas of western Oregon where spotted owls occupy sites with little or no old conifer forest, we recommend that managers retain existing old and mature conifer forest, broadleaf forest, broadleaf forest edges, and forested riparian areas as owl habitat.[92]

Spotted Owls Use Riparian Reserves for Dispersal and Much More. The NWFP expected riparian reserves to serve two main purposes for spotted owls – First, owls use high quality habitat in riparian reserves for movement of adults within and between territories, and for dispersal of juveniles between reserves. Second, riparian reserves provide "demographic support" for owls in the matrix, that is, the additional suitable owl habitat occurring in riparian reserves supports a larger owl population that is less vulnerable to extinction.

The riparian reserves were adopted in part as a replacement for the spotted owl dispersal standard known as the "50-11-40 rule" that pre-dated the NWFP. Riparian reserves were expected to maintain and develop late-successional

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[88] Anthony, R.G. 2013. Effects of Riparian Thinning on Marbled Murrelets and Northern Spotted Owls. Part III of the Science Review Team for the identification and interpretation of the best available scientific information to determine effects of riparian forest management. 28 January 2013.

[89] SEI Scientific Evaluation Of The Status Of The Northern Spotted Owl, Chapter 5: Habitat Associations, p 5-6. http://www.sei.org/owl/finalreport/Chapter5HabitatAssociations.pdf *citing* Irwin et al. (in press).

[90] SEI p 5-19, *citing* Hershey et al. (1998).

[91] Blakesly, Franklin & Gutierrez 1992. Spotted Owl Roost And Nest Site Selection In Northwestern California. J. Wildl. Manage. 56(2):388-392. http://www.fs.fed.us/psw/publications/blakesley/blakesley1.PDF

[92] Glenn, Hansen, & Anthony 2004. Spotted Owl Home-Range And Habitat Use In Young Forests Of Western Oregon. Journal Of Wildlife Management 68(1):33–50. http://www.eddylsrproject.com/deis/B1/703-47%20Glenn%202004.pdf

habitat, and provide superior dispersal habitat (i.e., better than 11" dbh and 40% canopy closure).[93] Higher quality dispersal habitat means that owls can not only move safely through the landscape with protective cover from predators, but they can also find roosting sites that are protected from weather extremes, hunting perches, a prey base offering foraging opportunities, as well as nesting/breeding sites.

An addendum to the Biological Assessment for the NWFP states:

> Owl dispersal requirements are believed to be met in Alternative 9 due to the cumulative benefits from a variety of land allocations and standards and guidelines which are not specifically earmarked as owl dispersal standards. The following are two [sic] the benefits which are expected to be the most important to assuring owl dispersal … .
>
> Riparian Reserve Scenario 1 results in an increase in the total acreage and the amount of owl habitat and murrelet habitat which would be retained along intermittent streams. This will have a greater effect in the provinces which have higher stream densities, as illustrated in the calculations below and the Aquatic Conservation Strategy discussion in Chapter 3&4. The larger acreage of protected habitat will increase the amount of dispersal and nesting habitat which will be retained throughout the owl and murrelet range.
>
> Riparian Reserve Scenario 1 will apply to Alternative 9 throughout the range of the northern spotted owl. This modification increases the acreage of Riparian Reserve along intermittent streams from one-half to the full height of a site potential tree. … The decision to implement Riparian Reserve Scenario 1 results in 3,233,100 acres of Riparian Reserves, which is an additional 638,000 acres (25 percent increase) over the Draft SEIS Alternative 9. … These Riparian Reserves will improve travel and dispersal corridors for many terrestrial animals and plants, and serve as connectivity corridors between the Late-Successional Reserves. …
>
> The standards and guidelines state that Riparian Reserve widths may be modified after completion of watershed analysis. That analysis will take into account northern spotted owl dispersal needs as well as other species that were intended to be benefited by this mitigation measure. There are two specific values in the application of Riparian Reserve Scenario 1 for spotted owl dispersal. First is the fact that the acreage reserved will be fairly evenly arranged across the landscape. This is important because of the documentation of juvenile spotted owl dispersal occurring in random

[93] 1994 ROD p 29-31.

> directions. An even distribution of dispersal habitat is important, and this was one factor which led to the development of the 50-11-40 rule. The second important feature is that the acreage reserved will have the potential both in the short term and in the long term to provide higher quality habitat than "11-40" conditions. The Riparian Reserves will have more complex forest structure and more dead and down, which will provide better roosting and foraging conditions than a strictly 11 inch dbh and 40 percent canopy closure stand would provide. This will increase its effectiveness in providing for owl survival during dispersal.[94]

David Wiens conducted intensive research on spotted owls in the Oregon Coast Range west of Eugene and found that:

> Spotted owls and barred owls in my study selected foraging sites that were closer to streams than random locations, and the relative probability of selection decreased linearly with increasing distance to a stream for both species … . In my study area, small low-order streams were common in lower elevation riparian-hardwood zones and steep, narrow ravines in patches of mature and old conifer trees. Strong selection for habitats near riparian zones has at least 3 explanations. First, cool microclimates associated with stream drainages may be favorable for thermoregulatory purposes during hot, dry summers (Forsman 1976, Barrows 1981). Second, and perhaps more importantly, productive vegetation conditions near streams are likely to support a rich diversity of prey used by both owl species, including woodrats (Carey et al. 1999, Anthony et al. 2003), flying squirrels (Meyer et al. 2005, Wilson 2008), deer mice, and shrews (Verts and Carroway 1998). … A third reason that riparian areas were selected may be due to their complex canopy structures that resulted from past fires that burned less intensively along stream corridors than in upslope areas (Reeves et al. 1989, Kauffman et al. 2001). Such structures may provide good perching opportunities for hunting terrestrial or arboreal prey. … [95]

The 1993 SAT Report, which provided the genesis of the ACS, also offered evidence that riparian areas serve as source areas for small mammals which may serve as a prey base for spotted owls and other predators, stating:

> Many mammal populations are also dependent on riparian areas. Doyle (1986 and 1990) found that riparian areas in old-growth forests in the

[94] 1994 FSEIS, Appendix G – Part 3 – Addendum to Biological Assessment. pp G-23 – G-24.
[95] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU.
http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf

> Cascades of Oregon were source areas for upland small mammal populations. Abundance of small mammals in coastal forests of Oregon were greatest within 300 feet of the stream, even though individuals were found up to 600 feet away (Gomez 1992). Chapter 5 of this document and USDI (1992) identify several mammal species that use or are dependent on riparian zones. Riparian corridors may also be important as dispersal, travel, and migratory routes for mammals (Gregory et al. 1991).[96]

Riparian Reserves Help Reduce Competition Between Spotted Owls and Barred Owls. Barred owls, native to eastern North American, have moved west and invaded the entire range of the northern spotted owl. When the NWFP was adopted in 1994 the barred owl was barely mentioned in the analysis. It was assumed that all suitable spotted owl habitat would be available to spotted owls and contribute to their conservation and recovery. Now barred owls occupy and defend tens of thousands (if not hundreds of thousands) of acres of suitable owl habitat that was assumed to be available for the recovery of the spotted owl. Barred owls and spotted owls use similar habitat, and there is significant dietary overlap between the two owls, though barred owls appear to be more generalists in both habitat and food sources.

The barred owl population appears to be growing exponentially, and there is no evidence that its population growth is slowing. To mitigate for this, suitable owl habitat needs to be conserved now more than ever. Protecting existing habitat in riparian reserves (and growing more habitat inside and outside reserves) helps increase the chances that spotted owls and barred owl can co-exist. Reducing stream buffers and increasing logging will just increase adverse competitive pressures and magnify the existential perils faced by the spotted owl.

There are two approaches being considered to address the new and significant threat posed by the barred owl: (1) grow more habitat, and (2) kill barred owls. These are not mutually exclusive. The first approach is to protect and grow more suitable owl habitat based on a well-known axiom of the "species-area relationship" from island biogeography which holds that as habitat area increases, the number of cohabiting species also increases.[97] Simply put, spotted owls are more likely to *co-exist* with barred owls if there is more suitable habitat, while

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[96] 1993 SAT Report, Chapter 5, pp 461-462.

[97] Oscar E. Gaggiotti and Ilkka Hanski. 2004. Chapter 14 - Mechanisms of Population Extinction. *In* Ecology, Genetics, and Evolution of Metapopulations. Elsevier. 2004. http://web.archive.org/web/20070612211945/http://www.eeb.cornell.edu/sdv2/Readings/Gaggiotti&Hanski.pdf. See also Martina Carrete, José A. Sánchez-Zapata, José F. Calvo and Russell Lande. Demography and habitat availability in territorial occupancy of two competing species. OIKOS 108: 125-136, 2005 http://www.ebd.csic.es/carnivoros/personal/carrete/martina/recursos/13.%20carrete%20et%20al%20%282005%29%20oikos%20108-125.pdf.

local or regional *extirpation* is more likely if there is less suitable habitat available. The existing riparian reserves help protect and restore more suitable habitat and increase the chances of co-existence. Reeves et al. proposal for more logging in riparian reserves will mean reduced area of suitable habitat and greater likelihood of competitive exclusion.

Corroborating these ecological principles, Dr. David Wiens recent telemetry work shows that barred owls have a survival advantage relative to spotted owls in fragmented landscapes. However, that survival advantage diminishes in landscapes with a higher proportion of older forest (as show in the figure below).[98]

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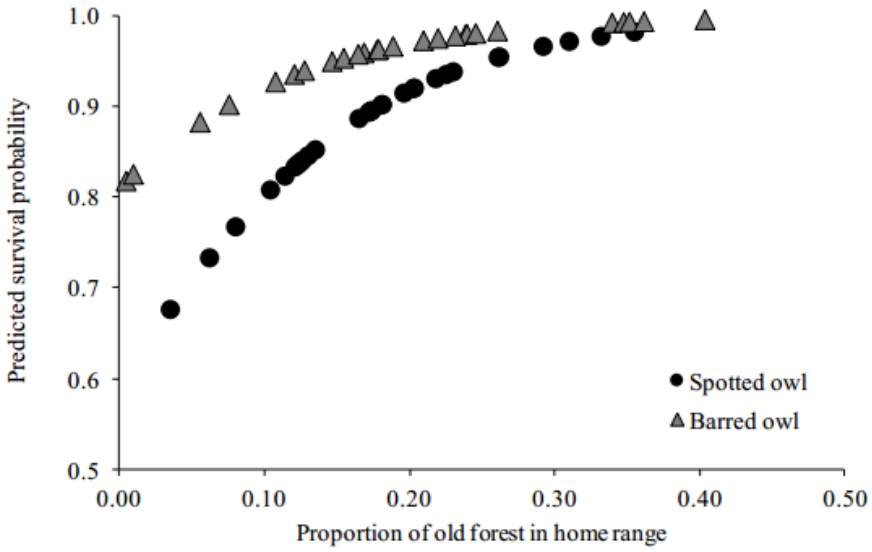

Figure 3.12. Predicted relationship between mean proportion of old conifer forest within the home range and survival probabilities of radio-marked northern spotted owls ($n = 29$) and barred owls ($n = 28$) in western Oregon, 2007–2009. Survival estimates were based on 6-mo time intervals; point estimates are from the best-supported model of survival, {S(Spp+old)}.

This provides strong support for the continued conservation of mature & old-growth forest inside and outside riparian reserves because spotted owls are able to

[98] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf. Wiens, D. 2012. Presentation to The Wildlife Society. http://tws.sclivelearningcenter.com/index.aspx?PID=6893&SID=163551 (at 1:12).

compete nearly equally with barred owls in landscapes with a high proportion of old forest. According to Wiens:

> Survival of both species was positively associated with an increasing proportion of old (>120 yrs. old) conifer forest within the home range, which suggested that availability of old forest was a potential limiting factor in the competitive relationship between the 2 species. When viewed collectively, my results support the hypothesis that interference competition with a high density of barred owls for territorial space can act to constrain the availability of critical resources required for successful recruitment and reproduction of spotted owls.[99]

To address the need for additional suitable habitat and to reduce the adverse competitive interactions between spotted owls and barred owls, the FWS adopted Recovery Action 32 that recommends conservation of a *subset* of high quality suitable owl habitat in all federal land allocations. This is a step toward mitigating the effects of the barred owl, but we are not aware of any analysis showing that protecting just a subset of the highest quality habitat is adequate mitigation for all the suitable habitat occupied and defended by barred owls. An impressive groups of spotted owl experts are already calling for conservation of a more inclusive subset of high quality owl habitat.[100]

Even if the highest quality owl habitat in the matrix is likely to be protected under Recovery Actions 10 and 32, riparian reserves still serve an important role in owl conservation. Reeves et al.'s suggestion otherwise is unsupported for several reasons. First, FWS made the recommendation for conservation of high quality habitat knowing that riparian reserves were important for spotted owls and riparian reserves were already protected. Spotted owl conservation likely requires conservation of *both* high quality owl habitat and riparian reserves, not one or the other. Second, riparian reserves are disproportionately important to owl conservation in general, and barred owl mitigation in particular, as described below. Protection of high quality owl habitat outside of riparian reserves is not a replacement for conservation of riparian reserves.

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[99] Id.

[100] Eric D. Forsman, Robert G. Anthony, Katie M. Dugger, Elizabeth M. Glenn, Alan B. Franklin, Gary C. White, Carl J. Schwarz, Kenneth P. Burnham, David R. Anderson, James D. Nichols, James E. Hines, Joseph B. Lint, Raymond J. Davis, Steven H. Ackers, Lawrence S. Andrews, Brian L. Biswell, Peter C. Carlson, Lowell V. Diller, Scott A. Gremel, Dale R. Herter, J. Mark Higley, Robert B. Horn, Janice A. Reid, Jeremy Rockweit, Jim Schaberl, Thomas J. Snetsinger, and Stan G. Sovern. "Population Demography of Northern Spotted Owls." DRAFT COPY 17 December 2010. This draft manuscript is in press at the University of California Press with a projected publication date of July 2011. It will be No. 40 in Studies In Avian Biology, which is published by the Cooper Ornithological Society. http://www.reo.gov/monitoring/reports/nso/FORSMANetal_draft_17_Dec_2010.pdf

David Wiens' recent PhD dissertation based on field research in the Oregon Coast Range provides strong evidence that riparian reserves are disproportionately valuable for reducing competition between spotted owls and barred owls. Spotted owls' habitat selection shows a preference for riparian hardwoods (more than 4x greater than the non-forest reference), only slightly less than the owls' preference for old conifer forest (>5x). Furthermore, there is evidence that riparian forests may provide hope as an area where resource partitioning and niche segregation exists between the two owl species. That is, the diverse mix of food sources and habitat structures in riparian reserves appears to meet important needs of both species with less direct competition for resources. Finally, Wiens' telemetry work provides evidence that when spotted owls venture close to barred owls, their selection for riparian forests intensifies.

> Under the base [resource selection function] RSF for spotted owls, old conifer was >5 times as likely to be selected for foraging as the nonforest reference category (selection ratio [exp(ˆ)] = 5.3, 95% CI = 4.4–6.4), followed by riparian hardwood (4.3, 95% CI = 3.5–5.4), mature conifer (3.4, 95% CI = 2.8–4.1), and young conifer forest (1.9, 95% CI = 1.6–2.4). … As proximity to a barred owl's core-use area increased, a spotted owl's affinity for old, mature, and young conifer forest types was gradually replaced by selection for riparian hardwood forest (Fig. 3.7). … [S]potted owls spent a disproportionate amount of time foraging in steep ravines within patches of old conifer forest. Spotted owls in my study also showed strong selection for riparian-hardwood forest along low-order streams. … My results also parallel those of Glenn et al. (2004), who reported that resource selection by spotted owls in younger forests of western Oregon was associated with hardwood (broadleaf) trees and riparian areas. … Spotted owls and barred owls in my study selected foraging sites that were closer to streams than random locations, and the relative probability of selection decreased linearly with increasing distance to a stream for both species. … The best model of resource selection indicated that spotted owls responded to an increased likelihood of encountering core-use areas of barred owls by decreasing the time spent in mature and old forest and intensifying use of riparian-hardwood forests. Additionally, I found that when spotted owls did enter a core-use area of barred owls they were located more frequently within riparian-hardwood forest than other forest types. … Data on habitat selection and dietary composition suggested that riparian hardwood forests may be an important aspect of resource partitioning between the Species … My results emphasize the value of older conifer forests, large hardwood trees, and moist bottomland riparian areas to resource partitioning between spotted owls and barred owls in the central Oregon Coast Ranges. … My finding that older riparian-hardwood forests played an important role in niche segregation between the 2 species

> emphasizes the need to consider these forest conditions within a management context, as these forests are likely to promote a wide diversity of prey for both species …"[101]

> The second approach to address barred owl competition is to shoot and kill barred owls in order to reduce their population and reduce their adverse competitive effects on the spotted owl. A large barred owl removal experiment is being proposed by USFWS, but it has not been approved or implemented and the results are not yet known. It is important to recognize that managers need to plan as if barred owls are here to stay. Even if barred owl control is practiced at a landscape scale, and even if it is effective in reducing competitive pressure on spotted owls, killing barred owls can never be expected to completely eliminate the threat, so the control program will have to be perpetually funded and implemented to remain effective. In an era of limited budgets and dysfunctional politics, the permanence and continuity of a barred owl control program are uncertain at best. If the control program were to cease, the barred owl population would be expected to repeat its rapid expansion across the region. This presents significant concerns, especially if owl habitat protections are ever relaxed in reliance on a barred owl control program, because the barred owl population would rebound much faster than suitable habitat can be regrown after clearcutting.

> Given the continuing pressures on the spotted owl from the barred owl, climate change, and industrial logging on non-federal lands, it will likely be necessary to both maintain riparian reserves, as well as conserve all suitable owl habitat inside and outside reserves. Increased clearcutting of riparian reserves is clearly not supported.

Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf.

BLM has not offered a rational explanation for its decision to reduce riparian reserves in the FEIS/PRMP in light of the above and other scientific evidence, nor has it explained how its actions comply with its duties under the ESA and other laws.

E. The FEIS/PRMP Arbitrarily Fail to Require Adequate Monitoring

The State Director was wrong to adopt an inadequate Monitoring Plan, FEIS/PRMP, Appendix V at 1807. Since the BLM has greatly reduced the riparian reserves under the NWFP,

[101] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf

adopted heavy thinning in outer riparian reserves and abandoned most other elements of the ACS, the BLM can no longer piggy-back on the aquatic and riparian ecosystem effectiveness monitoring program. BLM must – but has not indicated it will -- coordinate with DEQ to monitor stream shade, temperature, turbidity and sediment at random sites both in the decision area and the planning area with statistically valid techniques. This is necessary to protect water quality and comply with the law. BLM also must coordinate with ODFW to monitor both adult and juvenile coho salmon at stream segments identified by ODFW to provide statistically valid data for both the planning area and the decision areas. This is needed to ensure that ESA listed species are indeed being recovered and moving towards delisting. Monitoring must not be truncated after 3 years since timber harvest will continue after 3 years. Due to BLM documentation of overharvest and blowdown on the Medford District that downgraded and removed NSO habitat contrary to BiOps , the BLM must intensively monitor post- harvest canopy on the Medford District and require statistically valid monitoring of post-harvest units on other districts to ensure that BiOps are being implemented properly with respect to maintaining canopy standards for NSO. The purpose of post-harvest monitoring is to ensure that treat and maintain NSO habitat acres did not result in downgrading and removal as has been documented in the Medford District. The moosehorn technique developed by the Medford District would be used for post-harvest canopy monitoring. The BLM cannot rationally continue to delay post-harvest field monitoring of NSO canopy while a LIDAR technique is being developed. Post-harvest monitoring of vulnerable units must be continued indefinitely to assess windthrow which was not analyzed in the PRMP. BLM must field measure trees per acre lost due to windthrow and resulting canopy reductions as a reporting item similar to those harvest related reporting parameters listed in Table V-2 of the FEIS/PRMP at 1825. Windthrow on some thinned units in the Medford District is equaling the effects of timber harvest in reducing canopy and TPAs for NSO (i.e., cumulative effects).

The monitoring plan is inadequate to ensure that ESA species' habitat and populations are being maintained/recovered both in the short-term and long- term. This is important because timber harvest, roads, livestock grazing, and mining are identified as threats to listed species in planning area. A large timber harvest program and a large livestock grazing program affecting thousands of acres and hundreds of streams must have a large monitoring program to detect outcomes not predicted in the FEIS.

Many of the issues discussed in this section on riparian reserves are also addressed and described in the attached "Administrative Protest of the Changes to the Aquatic Ecosystem Protection in the Final Environmental Impact Statement and Proposed Resource Management Plan for the Revision of the Resource Management Plans of the Western Oregon Bureau of Land Management," prepared by American Rivers, Coast Range Association, Pacific Rivers, and Trout Unlimited." These additional protest points also were addressed in comments on the DEIS and are incorporated into this protest by this reference as though fully set forth herein.

IX. SURVEY AND MANAGE AND SPECIAL STATUS SPECIES

The Northwest Forest Plan adopted survey and manage as mitigation for past and ongoing loss of habitat associated with old forests and adversely affected by logging and fragmentation. BLM's articulation of the purpose and need for the FEIS/PRMP focuses on ESA-listed species, and pays lip-service to the goal of keeping other species from being listed but the measures of the PRMP do not include the survey and management requirements of the NWFP. BLM does not explain why less protection than that provided by the NWFP for species affected by past logging and habitat fragmentation, but not yet listed under the ESA, is adequate to meet its legal duties to protect these species. BLM acknowledges that it has a duty to avoid additional listings and the authority under the laws that govern management of BLM lands to do so. It's assertion that the survey and manage requirements of the NWFP were grounded in the 1982 Forest Service species viability regulation and this regulation does not apply directly to BLM lands is not an adequate or rational explanation of why (a) the laws that do apply to the BLM allow less protection for unlisted species than the NWFP's survey and manage requirements or (b) why the measures of the PRMP actually provide the same level of protection for unlisted species that depend on old forests as survey and manage. BLM must address the original purposes of the Northwest Forest Plan and provide a rational legal and factual basis for discarding the Plan's survey and manage requirements, requirements the courts have repeatedly upheld against legal challenges and proposed changes.

One of the purposes of the Northwest Forest Plan was to restore a functionally interconnected old growth ecosystem. Another purpose was to protect species currently listed under the Endangered Species Act while also preventing new old-growth associated species harmed by past logging and land management from being listed. The FEIS/PRMP indicates that these same purposes apply to BLM lands.

Past management of BLM lands has caused severe fragmentation of habitat for many, many species. Fragmentation of habitat results in increased extinction risk for wildlife populations and these effects tend to be time-lagged. Global warming will compound these effects. It takes a long time to recover from this "extinction debt." BLM lands remain highly fragmented, and the atmosphere remains polluted with excessive greenhouse gases, a significant amount of which was released as a result of past logging on BLM and other lands. So BLM has a duty to focus on species that may become threatened or endangered during the lag period, rather than just focus on the species that are currently listed. *See* Jens Kolk, Tobias Naaf, Herb layer extinction debt in highly fragmented temperate forests - Completely paid after 160 years? *Biological Conservation* 182 (2015) 164-172 http://www.sciencedirect.com/science/article/pii/S0006320714004777; Mark Urban, Accelerating extinction risk from climate change. SCIENCE 1 MAY 2015. https://www.sciencemag.org/content/348/6234/571.full.pdf (the agency has or should have copies of both of these papers and/or is or should be aware of them).

In the 1994 Northwest Forest Plan, broadly protecting species diversity was considered an integral part of maintaining functional old growth forest ecosystems. To meet the underlying

need for "a healthy forest ecosystem with habitat that will support populations of native species (particularly those associated with late-successional and old-growth forests)" the 1994 EIS considered various combinations of reserves and standards and guidelines that mitigate the effects of continued logging and other management activities. 1994 FSEIS Vol. I p. 1-4. The authors of the Northwest Forest Plan recognized that establishing large reserves on a highly fragmented landscape is not enough to meet the goal of preventing new species listings. Until the historic pattern of large blocks of old forest can be restored, the survey and manage program is needed to avoid loss of rare and uncommon species during logging.

For decades prior to 1992, logging proceeded on federal forests in the northwest without adequate consideration of the needs of species that are dependent upon late-successional and old-growth forest (LSOG). Logging plans were typically designed to disperse cutting units across the landscape in order to avoid acute effects in any one area, but the resulting habitat fragmentation caused widespread harm to virtually the entire forest ecosystem. In the 1993 FEMAT report and the 1994 FSEIS for federal forests within the range of the spotted owl (including the land to which the FEIS/PRMP would apply), federal forest managers for the first time attempted to craft a plan that would maintain and restore a functional interconnected late-successional old-growth forest ecosystem and provide for the needs of the spotted owl, marbled murrelet, Pacific salmon, and hundreds of other species associated with LSOG and aquatic ecosystems.

BLM's assertion in the FEIS/PRMP that the distribution of structural stages in the decision area in 50 years would be within the range of the average historic conditions is highly questionable. BLM must explain this conclusion in light of the analysis and conclusions in the NWFP. In 1993-94, the authors of the FEMAT and the NWFP FSEIS considered a range of alternatives and concluded that none of the alternatives would ensure attainment of a functional interconnected late-successional old-growth ecosystem within 100 years, because the reserves are so impacted by past management that they may need 200 or more years to regrow and recover. BLM has not explained why this perspective is either no longer accurate or does not apply to its lands. Late successional forests are in such short supply on non-federal lands, that BLM may need to provide greater than historic average levels of old forest on BLM lands in order to compensate for degraded conditions across the federal/non-federal landscape so that wildlife associated with old forests do not become threatened or endangered.

The 1994 SEIS relies primarily on a network of large reserves to maintain a functional interconnected late-successional old-growth ecosystem. 1994 ROD p 45. 1994 FSEIS Vol. I pp. 2-23. 2004 FSEIS Vol. I p. 129. "The reserve system is designed to be comprehensive, adequate, representative, and replicated." 2004 FSEIS Vol. I p. 129. However, there are two problems with reliance primarily on reserves. First, there are "significant unanswered questions about the degree to which a reserve system designed spatially to accommodate vertebrate dispersal meets the needs of small organisms," Perry *et al*. Sept 4, 2001 letter to the RIEC. *See also* 2004 FSEIS Vol. I pp. 108-109.

The second problem with excessive reliance on the reserves is that "old growth forests tend to be distributed in a highly fragmented mosaic." 1994 FSEIS Vol. I pp. 3, 4-29. Before

the reserves were established in 1994, they were significantly impacted by past logging and road building so the reserves are not currently capable of ensuring the persistence of all late-successional old-growth species.

> As much as 40 percent of the Late Successional Reserves currently in young plantations were established for timber production. Typically, the plantations are densely stocked with young Douglas-fir trees, and are unlikely to follow natural stand development pathways toward late successional conditions. Consequently, late-successional forest development in these plantations may be retarded or may not occur at all. In addition, young plantations often increase the occurrence of human caused wildfires, as well as increase the rate of spread and extent of fire and other disturbances across landscapes. The presence of young plantations in Late-Successional Reserves, thus, may increase the risk of loss of intermingled late-successional forests."

1994 FSEIS Vol. I pp. 3, 4-49; 2000 FSEIS Vol. I p. 17. So, the reserve system may not only be conceptually flawed for rare species with limited dispersal capabilities, but it is also non-functional for species that can disperse.

The current FEIS/PRMP analysis is mostly limited to a projection of the abundance of various forest structural stages, while failing to fully consider other important attributes and indicators of ecosystem integrity. For instance, providing the historic *abundance* of structurally complex forests does not ensure support for healthy populations of wildlife if the habitat is fragmented and not arranged in an appropriate spatial pattern. BLM's analysis asks: "What levels of habitat would be available under each alternative for [special status] species." In the FEMAT report and 1994 FSEIS, "The evaluation of late-successional and old-growth forest ecosystems is expressed as an expected likelihood of achieving long-term conditions based on three attributes that characterize the quantity and quality of the ecosystem." 1994 FSEIS Vol. I pp. 2-68. Those three attributes are: (1) abundance and diversity, (2) process and function, and (3) connectivity. BLM has not explained why it need not address these same or very similar factors in assessing the effectiveness of the PRMP. BLM has not taken a hard look at the degraded state of the reserves and the inability of those degraded forests to support rare and uncommon wildlife, and keep them off of the list of threatened & endangered species. BLM's approach undermines community stability, adds uncertainty to timber goals and is otherwise arbitrary and contrary to law.

The FEIS also needs to disclose that the NWFP's survey and manage buffers play a disproportionately important role in conservation of species because they are not randomly located, but rather they are (1) known to provide habitat for and be occupied by at-risk species and (2) they are located in areas that are threatened with immediate habitat modification.

BLM cannot rely on the fact that a large fraction of the landscape is in reserve land allocation, because (a) a large fraction of the reserves are covered by early and mid-seral forests that do not provide habitat for species of concern and so many reserved forests may not be

occupied by rare and uncommon species; and, (b) old forests in reserves are highly fragmented, so rare species may not persist over the long term even where they currently exist.

The FEIS does not adequately disclose the ecological consequences of increased logging in the absence of the survey and manage program, nor does the FEIS explain how BLM can justify elimination of the survey and manage program now, or why the agency's proposed replacement will afford the same level of protection for unlisted species as survey and manage.

A. The PRMP Would Lead to the Listing of Species and Increase Economic Instability

In its response to comments in the FEIS/PRMP, RTC 16 (p 1848), BLM says, "The Survey and Manage measures were included in the Northwest Forest Plan to respond to a goal of ensuring viable, well-distributed populations of all species associated late-successional and old-growth forests. As explained in the Draft RMP/EIS, this goal of the Northwest Forest Plan was founded on a U.S. Forest Service planning regulation, which did not and does not apply to the BLM," BLM's departure from survey and manage is not justified by this rationale because BLM has its own legal duties both to protect at risk species and to avoid future ESA listings. BLM has failed to provide an analysis that articulates the legal basis for a lower level of protection for admittedly rare and at-risk species on BLM lands.

> "One of the purposes of the Endangered Species Act is the preservation of ecosystems upon which endangered and threatened species depend. A forward-looking land management policy would require that federal lands be managed in a way to minimize the need to list species under the ESA. Additional species listings could have the effect of further limiting the O&C Lands Act's goal of achieving and maintaining permanent forest production. This would contribute to the economic instability of local communities and industries, in contravention of a primary objective of Congress in enacting the O&C Lands Act. That Act does not limit the Secretary's ability to take steps now that would avoid future listings and additional disruptions."

See 1994 ROD at 50. This approach remains embedded in BLM's Sensitive Species Policy which says "It is in the interest of the BLM to undertake conservation actions for such species before listing is warranted. It is also in the interest of the public for the BLM to undertake conservation actions that improve the status of such species so that their Bureau sensitive recognition is no longer warranted. By doing so, the BLM will have greater flexibility in managing the public lands to accomplish native species conservation objectives and other legal mandates." BLM Manual 6840 - Special Status Species Management. http://www.fs.fed.us/r6/sfpnw/issssp/documents/ag-policy/6840-im-2009-039-att1.pdf.

In apparent contradiction to the policy set forth above, BLM's special status species policy goes on to say that timber production takes precedence over these wildlife protections because "former Oregon and California Railroad Company Lands in western Oregon are

assigned timber production as a dominant use. … The application of the special status species policy to provide specific protection to species that are listed by the BLM as sensitive on lands governed by the O&C Act must be consistent with timber production as the dominant use of those lands." BLM Manual 6840 - Special Status Species Management. http://www.fs.fed.us/r6/sfpnw/issssp/documents/ag-policy/6840-im-2009-039-att1.pdf. To the extent this statement is intended to indicate some lower level of legal protection for at-risk species on O&C lands, as explained above, this interpretation of the Act is incorrect and, in any event, it is not the only law that applies to BLM lands and protects at-risk wildlife.

Moreover, application of this policy as a basis to reduce protections for at-risk species from those provided by the NWFP's survey and manage requirements is irrational. As BLM recognizes, keeping rare and at-risk species off the ESA list will help make timber production more predictable, which supports the purposes of the O&C Act and the stated purpose and need behind the FEIS/PRMP. BLM admits as much: "Declining populations of species now listed under the Endangered Species Act (16 U.S.C. 1531 et seq.) have caused the greatest reductions and instability in the BLM's supply of timber in the past. Any further population declines of listed species or new species listings would likely lead to additional reductions in timber harvest." FEIS/PRMP at 5. In addition, the PRMP covers both O&C lands and public domain lands. BLM provides no explanation for applying its (incorrect) O&C Act principle of timber dominance to public domain lands. BLM provides no legal or rational basis for eliminating the survey and manage program and that program meets its stated purpose and need.

The agency also has not explained why reduced protection for at-risk species under the PRMP would provide protection at least as good as survey and manage, especially in light of other changes from the NWFP it proposes, such as shrinking riparian reserves, eliminating the 80 year limit on logging in LSRs, and adding many new loopholes that favor logging over conservation. BLM has not full disclosed or analyzed (let alone mitigated for) the increased risk that eliminating survey and manage and other requirements of the Northwest Forest Plan, combined with increased logging, will impose in terms of increased risk of extinction and ESA listings that interfere with achievement of the PRMP's purpose and need, including increased uncertainty for timber production.

B. The BLM Failed to Take a Hard Look at Potential Listing for Survey and Manage Species Due to the Elimination of Survey and Manage and Riparian Reserve Reduction

BLM cannot rationally conclude that they will be able to meet their stated purpose of providing increase certainty to a sustainable level of timber production if they are leaving themselves vulnerable to disruption from new listings as a result of reducing the protections for at-risk but unlisted species afforded by survey and manage. BLM has failed to review and discuss all of the FWS and NMFS decision to *not* list species that rely, at least in part, on the Northwest Forest Plan and its land allocations, including *inter alia*, wide riparian reserves, survey and manage, and the 80-year age limit for logging in LSRs.

The 2000 SEIS for Amendments to the survey and manage standards & guidelines found that without pre-logging surveys, other animals, like *Ancotrema voyanum, Deroceras hesperium, Helminthoglypta talmadgei, Megomphix hemphilli, Monadenia chaceana, monadenia fidelis minor, Monadenia infumata ochromphalus, Pristiloma arcticum crateris, and Prophysaon coeruleum* would be extirpated from a significant portion of their range due to "loss of sites or population areas [that] reduce population interaction, connectivity, and normal biological function…"[102]

Similarly, three animals, *Hemphillia pantherina, Vertigo* n. sp., and *Vespericola pressleyi*, are expected to face a high risk of extirpation without pre-logging surveys due to "the rarity and narrow ranges of these species and lack of inclusion on the Special Status Species Programs."[103]

Several plants, including *Tetraphis geniculata*, face a higher extinction risk without pre-logging surveys since "the potential for loss of these sites would result in a high risk of extirpation in the Northwest Forest Plan area for this species." 2000 DSEIS at 91. *Tetraphis geniculata* also requires decaying coarse woody debris in non-late-successional and non-old-growth stands.

Ramalina thrausta will also face heightened extinction risk without pre-logging surveys because the "small number of known sites and lack of protection through reserves, or the Agencies' Special Status Species Programs, there is high risk of extirpation in the Northwest Forest Plan."[104]

Four other plant species, *Dendriscocaulon intricatulum, Nephroma occultum, Peltigera pacifica, and Pseudocyphellaria rainierensis*, face high risk of extirpation over portions of their range[105] without pre-logging surveys. Similarly, *Cypripedium montanum* would face high risk of extirpation in Washington and Oregon[106] without pre-logging surveys.

BLM says, its "Special Status Species policy directs that the BLM address Bureau Sensitive species and their habitats in the planning process, and, when appropriate, identify and resolve significant land use conflicts with Bureau Sensitive species. In implementing the RMP, the BLM will ensure that actions affecting Bureau Sensitive species will be carried out in a way that is consistent with the objectives for managing those species and their habitats at the appropriate spatial scale." There was a BLM sensitive species program in place when the Northwest Forest Plan was adopted but it was thought to be ineffective, so the survey and manage program was put in place to make it more rigorous and enforceable (e.g., pre-disturbance surveys and site protection are less discretionary, more mandatory). BLM does not explain why shifting away from survey and manage towards a policy similar to one previously considered

[102] 2000 DSEIS, p. 134.
[103] 2000 DSEIS, p. 135.
[104] 2000 DSEIS, p. 115.
[105] 2000 DSEIS, p. 118.
[106] 2000 DSEIS, p. 123.

ineffective is rational. As noted by Oregon Wild in litigation involving BLM's prior efforts to eliminate the survey and manage requirements, BLM's special status species policy is less effective than survey and manage:

> The SSS programs do not assuredly protect species. Whether a species stays on any of the four SSS lists, as Judge Pechman noted, is at the discretion of Regional Foresters and State [BLM] Directors. *Northwest Ecosystem*, 380 F.Supp.2d at 1190; see AR 1109. And even if species remain on SSS lists, as a Forest Service biologist noted, "few species get added to SSS in all of their NWFP range. The 'protection' afforded is FAR less due to this discrepancy." AR 16649 (emphasis original). Further, unlike the standard, the SSS programs generally do not require pre-disturbance surveys before site-specific projects that can destroy rare or uncommon species or their habitat. AR 16299 at 44 & 42-44. Indeed, it is up to the complete discretion of project managers whether to protect SSS-listed species at the site-specific level at all. AR 643 & AR 16649.

Plaintiffs Reply Brief on Summary Judgement (2009), *Conservation NW et al v Mark Rey et al*. CASE NO. C08-1067-JCC. BLM's SSSP project analysis requirements are not equivalent to survey and manage and BLM has not explained why the PRMP protections for at-risk species which afford BLM managers extensive discretion *not* to search for and *not* to protect rare and at-risk species adequately protects these species and is sufficient to avoid future listings and meet BLM's other wildlife protection responsibilities. As the FEIS plainly states "The determination of when specific protections to Bureau Sensitive species on O&C lands are not consistent with timber production as the dominant use of those lands is a determination best made at the project and site level." FEIS/PRMP at 1941.

BLM requires surveys of bureau sensitive species only when the proposed action will cause a "significant effect on their status." This standard is an invitation to avoid surveys because BLM has proved itself reluctant to find that logging causes significant effects on any species because a finding of significance triggers preparation of an EIS instead of an EA. BLM often logs habitat for rare and uncommon species, but very rarely prepares EAs for timber sales.

The BLM also says regarding survey and manage, "the Proposed RMP would generally provide a larger network of habitat for Survey and Manage species and the amount of habitat for Survey and Manage species would generally increase over time." FEIS/PRMP 1850. This statement fails to acknowledge or account for the loss of habitat near streams in favor of other habitat away from streams. Many species protected by survey and manage are associated with moist conditions near streams, and those species would suffer under the PRMP, but BLM does not disclose that. Second, BLM fails to account for the loss of habitat quality when BLM exploits the many new loopholes for logging in reserves including widespread canopy reduction for fuel reduction and to address insects. Many survey and manage species prefer cool moist forests with abundant dead wood, but BLM will be conducting activities in reserves that make the stands hotter and dryer and deprive them of dead wood.

BLM attempts to justify reducing riparian reserves by citing increases in the extent of non-riparian reserves, but protecting uplands does not replace the ecological function of protecting wide riparian reserves. The 2000 SEIS for Amendments of the survey and manage standards & guidelines found that for 13 animals, *Fluminicola* n. sp. 3, 14, 15, 16, 17, 18, 19, 20; *Fluminicola seminalis*; *Juga* (O) n. sp. 3; *Lyogyrus* n. sp. 1 and 3; and *Vorticifex* n. sp. 1, the Aquatic Conservation Strategy had provided substantial protection. 2000 S&M DSEIS at 135. Where populations of these species straddle the border between USFS and BLM lands, reducing riparian reserves as proposed by BLM would undermine USFS efforts to conserve those populations and would increase risks of extirpation and ESA listing. BLM did not fully and accurately disclose this serious adverse impact of reducing the extent of riparian reserves along with eliminating survey and manage requirements.

BLM also failed to adhere to its sensitive species policy which says "planning should consider all site-specific methods and procedures needed to bring species and their habitats to the condition under which management under the Bureau sensitive species policies would no longer be necessary." BLM Manual 6840 - Special Status Species Management. http://www.fs.fed.us/r6/sfpnw/issssp/documents/ag-policy/6840-im-2009-039-att1.pdf. The Northwest Forest Plan recognizes that its reserves are fragmented and degraded by past logging and would not be fully functional for 100-200 years. BLM in 1994 therefore adopted an approach that would locate and protect occupied sites of rare and uncommon species. Now BLM will eliminate that important mitigation without an adequate explanation or replacement program. This is especially concerning given that 32% of currently known sites for survey and manage species are allocated to the Harvest Land Base.

BLM simply over-estimates the ability of the PRMP to conserve rare and uncommon species. BLM fails to adequately recognize that (1) BLM over-estimates the effectiveness of reserves that are not currently functional and won't be for decades, (2) BLM over-estimates the effectiveness of protecting generic habitat that may or may not be occupied; protecting occupied sites is disproportionally important; (3) BLM fails to account for the disproportionate effects of cutting riparian reserves in half because many rare and uncommon species disproportionately rely on near-stream habitat; and (4) BLM erroneously asserts that logging in reserves will be limited and benign. The PRMP includes too many loopholes for logging in reserves, and much of that logging will be adverse to rare and uncommon species.

The BLM's analysis relies upon the development of hypothetical future structurally complex older forests to offset the very real and **immediate** impacts associated with abandoning the NWFP's survey and manage requirements. These time-differential related impacts go unanalyzed in the FEIS and the BLM has failed to take a hard look at the immediate impacts to these various species. The FEIS/PRMP indicates that the BLM intends to rely upon projected increases in hypothetical habitat for Bureau Sensitive Species (BSS) and (former) survey and manage species rather than protecting the actual known sites where these species occur. Trading occupied actual habitat for hypothetical future habitat is arbitrary and capricious. Many of these species if displaced will not be able to reestablish themselves in these hypothetical future stands.

The BLM's analysis does not take into account the effects of immediate species displacement, connectivity for these species, or attempt to predict in anyway what portion of future habitat will be occupied given these various factors.

C. BLM's Abandonment of Survey and Manage Violates BLM's Sensitive Species Policy

The BLM asserts that the survey and manage requirements of the NWFP are not necessary "to avoid species extinctions or to achieve the purposes of the RMP revision or to meet BLM's obligations under applicable law and regulation," because the PRMP provisions are better than the NWFP for several reasons:

1. The agency is increasing the quantity of reserves.

2. All old-growth forest conditions would be in reserves which is not the case under the NWFP.

3. Under the PRMP more mature forest would be reserved.

4. More habitat characteristics are protected in the Harvest Land Base than in the matrix; and

5. Some Survey and Manage Species would continue to be managed as Bureau Sensitive Species.

These reasons are inadequate, and the PRMP does not satisfy the BLM's duties towards Bureau Sensitive Species.

First, by eliminating survey and manage BLM is neglecting its survey and inventory requirements under FLPMA. The survey requirement of survey and manage was designed to satisfy the BLM's obligation under FLPMA:

> The BLM is responsible for preparing and maintaining, on a continuing basis, a current inventory of the public land and its resources (FLPMA, 43 U.S.C. 1701 Sec.201 (a)). This inventory information, along with monitoring data collected under a variety of programs, shall be used to evaluate the current status and trends of plants and animals and their habitats on BLM-administered lands, and to respond to FWS and/or NMFS *Federal Register* Notices of species status review (e.g., 90-day, 12-month, 5-year, and annual candidate reviews).

Requiring the BLM to conduct surveys for and monitor populations of BSS, which had a great deal of overlap with survey and manage especially when it came to species being considered for listing, allowed the BLM to meaningfully inventory and keep track of these imperiled species on its land and satisfy FLMPA and consultation obligations.

Accordingly, BLM's BSS policy requires "Monitoring populations of Bureau special status species to determine whether management objectives are being met. Records of monitoring activities are to be maintained and used to evaluate progress." By dropping survey and manage BLM is eliminating surveys for many of these BSS and in turn violating its responsibilities under FLPMA to keep an active inventory of these species.

Second, although the BLM can claim that it is increasing the amount of the reserves and the amount of old-growth and mature forest in reserves, this does not necessarily provide better conditions for a variety of BSS species. Furthermore, the PRMP will allow commercial logging for numerous "forest health" reasons in reserves, logging that is not permitted under the NWFP. This additional logging in reserves will certainly have adverse impacts to any SMS or BSS species but these effects are not accounted for in the FEIS.

Third, although the BLM claims that the majority of known sites for survey and manage species would be protected, most known sites of survey and manage species were only discovered in pre-disturbance, site-specific surveys. Much of the BLM land base in this plan has not been surveyed and thus an incredibly high percentage of sites are simply not known to the agency, would not be surveyed prior to logging, and likely would not be protected. As the BLM concedes: "the Draft RMP/EIS does not include quantified population analysis of the Survey and Manage species [because] survey and species data on Survey and Manage species are incomplete and insufficient to provide for any meaningful analysis of population trends." This is precisely why the BLM needs to continue to conduct survey and manage to satisfy its monitoring and inventory responsibilities for these imperiled and uncommon species.

Fourth, the BLM has not taken into consideration impacts of habitat fragmentation and species displacement in its simplistic approach. For decades prior to 1992, logging proceeded on federal forests in the Pacific Northwest without adequate consideration of the needs of species that are dependent upon late-successional and old-growth forest (LSOG). Logging plans were typically designed to disperse cutting units across the landscape in order to avoid acute effects in any one area, but the resulting habitat fragmentation caused widespread harm to virtually the entire forest ecosystem. The result of this fragmentation and logging has been the displacement of imperiled species including BSS from many previously logged parcels. These species have routinely not been able to recolonize areas that grow back for myriads of reasons. The red tree vole for example:

> "Under the current conditions of habitat fragmentation within the DPS, the ability of red tree voles to disperse between patches of remaining high-quality habitat are extremely restricted, and the evidence suggests that any remaining tree vole populations within the DPS are likely relatively small. The potential for the local loss of populations is therefore high, as remnant habitat patches formerly occupied by tree voles may not be recolonized due to the distance between habitat fragments and the short-distance dispersal capabilities of the species, leading to local extirpation and further isolation of the remaining small populations, and possibly eventual extinction."

Red tree voles will be displaced by logging and habitat fragmentation and potentially will not be able to recolonize habitat that develops in 50 years because existing populations and sites will be cut off from these "recovered" areas. That is why red tree voles have rarely been documented as re-inhabiting stands that have even been thinned in the past, much less clearcut. *See Red Tree Vole Warranted But Precluded Finding.* The elimination of survey and manage coupled with the elimination of half of the riparian reserves designed to mitigate connectivity issues facing BLM lands in the checkerboard will certainly have an impact on the ability of many BSS to recolonize stands that mature in 50 years. This core assumption is flawed and BLM fails to explain why it may rationally rely on it.

D. Red Tree Voles

The BLM makes several significant errors in its analysis of the effects of the PRMP on red tree voles. First, it assumes that "Red tree voles are widely distributed throughout much of their range in Oregon, except in the northern Oregon Coast Range – particularly within the North Coast Distinct Population Segment area north of Highway 20." FEIS/PRMP at 919. This is not true. Red tree voles, and not just the population north of Highway 20, remain a Bureau Sensitive Species. BLM provides very little analysis of the significant portion of this species' population south of Highway 20. In fact this portion of the population is critical to the long-term persistence of the species because the FWS determined that regardless of the conservation measures put into place for the species north of Highway 20, the existing vole population north of the Siuslaw will fail. Therefore, protection, survey, and monitoring of the red tree vole is especially needed in the rest of the species range in Oregon. Neglecting this significant portion of the species' range and failing to take a hard look at the impacts of the PRMP on it and the potential for these impacts to contribute to future listing is a violation of NEPA and contrary to law.

The BLM makes another false assumption in its vole analysis. The BLM assumes that "sites within reserve allocations would be protected under all alternatives and the Proposed RMP." FEIS/PRMP at 921. This is a false assumption because the PRMP permits logging in reserves (apparently without pre-logging surveys) and in red tree vole habitat areas specifically. Red tree voles have previously enjoyed complete immunity from logging in Habitat Areas, and these were simply placeholders until a landscape level approach could be taken for the species conservation. Habitat Areas were supposed to just maintain the species for the time being, and were generally believed to be unable to support long-term persistence of the species due to the isolation that will eventually take a breeding and genetic toll on the species. In the PRMP, the BLM is arbitrarily allowing logging in these Habitat Areas as long as it maintains 75% canopy cover and does not log nest trees. This could lead to impacts to the voles, the previous and only existing management recommendations for the species states as much, and the BLM has not provided any scientific evidence to the contrary. The BLM is arbitrarily changing management for this species without any support and operating under the assumption that this changed management will "protect all sites in reserves." The BLM has no basis to make this assumption.

The BLM also makes an abrupt departure from an assumption in the DEIS that all vole sites are critical to persistence north of Highway 20. This was a key conclusion of the FWS'

warranted but precluded finding for the vole that was published recently and was the latest study of voles in Oregon. The BLM disavows this statement, but provides no rationale scientific or otherwise for making this about face. The BLM merely states that the status of voles in this area is unknown. This is insufficient – incorrectly asserting ignorance does not excuse the failure to take a hard look at potential impacts as required under NEPA, and the latest and most up-to-date science on the species, incorporated in the DEIS, states that all sites north of Highway 20 are critical to persistence. Yet the PRMP plans on removing many of these sites and will not protect them all. Thus the PRMP will contribute towards the need to list the species. Even the sites that are discovered and protected under the new management regime by BLM will result in canopy disruption against the advice of the FWS.

E. Oregon Spotted Frog

BLM falsely assumes that no activity except for grazing will impact the Oregon Spotted Frog. Logging activities and associated road construction could potentially impact the species as well and a failure to take into account these effects or disclose them is a violation of NEPA.

F. Pacific Fisher

In response to comments and suggestions, the BLM roughly forecast fisher populations in an attempt to analyze the PRMP's impacts on the species. However, there are some major flaws with this population estimation. First, the BLM assumes that all suitable habitat is occupied without providing a rational or scientific basis for this assumption. This dramatically overstates population levels and renders projected declines in the population insignificant in terms of predicting whether or not the PRMP will contribute to the need to list the species. Some on-the-ground analysis needs to occur to predict fisher populations levels. The BLM needs to conduct some plot samples of fisher habitat to determine what percentage of suitable habitat is indeed occupied and use this percentage in relation to total occupied habitat. As the BLM recognizes, fishers have faced mortality from a variety of sources and it is incredibly likely that all suitable habitat is not occupied. Failure to conduct this analysis is a failure to take a hard look at fisher impacts. Failing to conduct this analysis renders a conclusion about the PRMP's contribution to the need to list the species without factual support.

Second, the BLM radically overstates the amount of fisher habitat because it includes all denning, resting and foraging habitat in its population model. While the BLM assumes that "denning habitat would also provide resting and foraging functions, that resting habitat would also provide foraging function, and that foraging habitat would only provide foraging function," FEIS/PRMP at 873, the population model simply lumps it all together and derives population predictions from those numbers. This would be the equivalent of grouping all spotted owl habitat types together and basing population projections on that total, even though it is known owls will not successfully nest in certain areas even though they may be important for other purposes. The FEIS/PRMP should either be based on a real population analysis or require project specific surveys.

Third, the BLM claims that other causes of mortality to the fisher are unpredictable. This is completely untrue. Other causes of mortality can be predicted, have been predicted for other species, including wolves, and should be included here when generating a conclusion about cumulative impacts to the species. If the BLM claims it can conduct a population analysis and estimate without any on-the-ground data collection, it certainly can incorporate estimates about mortality from poisoning and traffic accidents into such an analysis.

Yet the BLM is willing to conclude that hypothetical future habitat growth outweighs the impacts of current activities and so refuses to look for, analyze, or buffer habitat for this rare species in the planning area. This despite the fact that all of the action alternatives reduce denning habitat, resting habitat and total habitat for the fisher for first 10-20 years of implementation.

The BLM admits that "these estimates of the fisher population are approximate and the absolute population numbers should be interpreted with great caution. The BLM estimated population numbers only to provide the BLM with the relative outcomes of the fisher population under the alternatives and the Proposed RMP," PRMP at 873, but this relativity analysis is meaningless to overall conclusions about whether the BLM is contributing to the need to list the species. Without debate, the BLM is planning on negatively impacting the fisher and its habitat, and this is significant because the species is imperiled.

The FEIS/PRMP fails to protect all snags and live trees >32" dbh since these are used for fisher denning and are likely unavailable on most private timberlands. Fuels treatment projects also are like to be in conflict with fisher preferred habitat. Additionally, fishers prefer undisturbed riparian areas. The robust riparian reserves in the no action alternative would best meet the needs of fishers. A spatially explicit analysis is needed to ensure that cumulative impacts from these and other aspects of the PRMP discussed above do not harm the fisher or increase the risk of an ESA listing. Current project level analysis simply assumes that project impacts are not important because there is abundant fisher habitat that is not being impacted. As discussed above, this is not correct.

BLM also claims that it is restricting OHV use near "known fisher den sites" but because the BLM is not conducting project specific fisher surveys, this restriction is nearly meaningless and does not address the concerns raised in comments or this protest.

Finally, BLM claims that it did not address barriers to fisher dispersal, like roads, because denning habitat and structures are a bigger concern for the species. Simply because one influencing factor on the species is greater than another does not excuse the BLM's failure to analyze or take into account that factor.

G. Eagles

In response to concerns about impacts to eagles raised in comments on the DEIS, the BLM argues that because the PRMP prohibits activities within approximately 300 feet of eagle

nests during breeding season, there will be no effects on eagles. However, the BLM is not requiring eagle surveys prior to timber sales, so the BLM has no way of knowing where the eagle nests will be. The elimination of survey requirements for this species renders the seasonal prohibition on activities meaningless.

Additionally, the analysis in the FEIS/PRMP improperly fails to account for the amount of illegal ORV use that occurs and will potentially violate these seasonal restrictions for known eagle nest sites. The BLM will be building extensive new roads, and new roads create new access to certain areas that could lead to increased impacts on eagle breeding. This impact needs to be quantified and accounted for.

H. Gray Wolf

The BLM fails to analyze impacts to wolf dispersal in the PRMP. Gray wolf populations are still very new to Oregon and the project area, and there are crucial areas -- choke points -- that provide wolf dispersal corridors around population centers and major roadways. Human presence and industrial activity associated with logging can influence or prevent successful dispersal, and the BLM here has failed to consider these potential impacts to dispersal, identify critical dispersal corridors, or identify potential seasonal restrictions in these areas to facilitate wolf recovery in the state.

The BLM admits that increased road densities will impact wolves, but concludes that because packs have established themselves in areas with high road densities, this does not matter. These packs are very newly established and it remains to be seen whether they will be successful. Additionally, high road densities don't in themselves render wolf habitat completely unsuitable for denning, but it increases the chances of mortality for wolves in the pack; mortality from traffic accidents and hunting/poaching. The BLM has failed to account for this increased risk or analyze the impact on wolves.

I. Marbled Murrelet

BLM claims that "Under … the Proposed RMP, the Late-Successional Reserve is larger than under the No Action alternative (i.e., the Northwest Forest Plan), providing increased benefits to the marbled murrelets." RTC 325, FEIS/PRMP at 1978. This statement is misleading because the PRMP includes two big changes that will harm marbled murrelets: First, cutting riparian reserves in half will adversely affect murrelets that disproportionately use riparian reserves. Reducing stream buffers will increase logging and fragmentation of murrelet habitat. This will increase murrelet exposure to nest predation and limit recovery opportunities in landscape positions that have high recovery potential. Second, eliminating the 80 year age limit on logging in LSR in moist provinces, as BLM is doing, and adding a host of new loopholes that allow increased logging in LSRs will also degrade habitat for marbled murrelets by exposing them to various threats, including especially nest predators.

By halving riparian reserves and by eliminating protection for stands over 80 years old in LSRs, BLM fails to meet the recommendations of the marbled murrelet Recovery Plan without explaining why it cannot meet these recommendations or can properly disregard them in light of its duties under the ESA. After reading the standards & guidelines in Appendix B, it is clear that NO PART of the Late Successional Reserves are really off-limits to logging. If it's not suitable habitat, BLM can log to accelerate owl habitat. In nesting, roosting, foraging habitat, BLM can log down to 60% canopy cover even if it degrades habitat. In high-quality RA32 habitat, BLM can log for roads, yarding corridors, hazard trees, and fuel and insects, even if it degrades or removes habitat. The PRMP thus proposes a variety of loopholes for logging in LSRs which would be adverse to marbled murrelets but the 1997 Marbled Murrelet Recovery Plan says:

> On April 13, 1994, The Secretary of Agriculture and the Secretary of Interior signed a Record of Decision (ROD) adopting Alternative 9 of the President's Forest Plan (U.S. Department of Agriculture and U.S. Department of the Interior 1 994b). This is an ecosystem approach to management of Late-Successional Forests and their associated species within the range of the northern spotted owl. Marbled murrelets and their nesting habitat on Federal lands are specifically considered in this plan. … (p 87-88)
>
> …
>
> The short-term actions are critical because of the length of time necessary to develop most new nesting habitat (100-200 years). They should be factored into decisions on which areas should be secured and how habitat (both terrestrial and marine) should be maintained or improved. (p 121)
>
> …
>
> Consistent with the Forest Plan Record of Decision, thinning within Late-Successional Reserves should be restricted to stands younger than 80 years.... 3.2.1.2 Protect 'recruitment' nesting habitat to buffer and enlarge existing stands, reduce fragmentation, and provide replacement habitat for current suitable nesting habitat lost to disturbance events. Stands (currently 80 years old or older) that will produce suitable habitat within the next few decades are the most immediate source of new habitat and may be the only replacement for existing habitat lost to disturbance (e.g., timber harvest, fires, etc.) over the next century. Such stands are particularly important because of the vulnerability of many existing habitat fragments to fire and wind and the possibility that climate change will increase the effects of the frequency and severity of natural disturbances. Such stands should not be subjected to any silvicultural treatment that diminishes their capacity to provide quality nesting habitat in the future. Within secured areas, these "recruitment" stands should not be harvested or thinned." (page 143)

Implementing and maintaining consistency with the 1997 Recovery Plan for the Marbled Murrelet requires BLM to maintain the existing protected areas, including wider riparian reserves, and ensure adequate protection of those protected areas. Shrinking riparian reserves and eliminating the 80-year limitation in LSRs is inconsistent with BLM's duties under the Endangered Species Act and the PRMP violates the ESA by failing to conserve habitat for marbled murrelet as recommended in the recovery plan.

BLM says that clearcutting would not occur in riparian reserves. RTC 327, FEIS/PRMP at 1978. This statement is misleading. The Northwest Forest Plan has wide riparian reserves. The PRMP has narrow riparian reserves. The difference between these two would be reallocated to match the adjacent land allocation, in many cases Harvest Land Base. This means that thousands of acres of current and potential murrelet habitat, currently protected as riparian reserves, would be reallocated to Harvest Land Base and subject to regeneration harvest resembling clearcutting. BLM's NEPA analysis is misleading to the public and the decision-maker because it does not make this change in reserve width and the attendant change in allowable harvest methods explicit and does not analyze the effects of this change on murrelets.

BLM also says "more of the current marbled murrelet nesting habitat would be within reserve land use allocations under the action alternatives and the Proposed RMP." FEIS/PRMP at 1978. But BLM failed to recognize that the riparian reserves were intended to grow more habitat for marbled murrelets, and by radically reducing stream buffers, BLM is foregoing the opportunity to grow additional murrelet habitat near streams where they need it most.

Public comments referenced a white-paper that explained why wide riparian reserves are important for marbled murrelets. Heiken (2013) said:

> Through the establishment of riparian reserves, the NWFP sought to achieve diverse conservation purposes (e.g., not just water quality; not just fish conservation):
>
> The NWFP Record of Decision adopted Riparian Reserve Scenario 1 with the explicit intention to benefit: spotted owls, marbled murrelets, marten, red tree vole,[107] … [by]
>
> protecting and restoring habitat and dispersal/connectivity opportunities for a wide variety of terrestrial species associated with late successional forest, including explicitly, spotted owls and marbled murrelets.[108]
>
> The primary reasons for adoption of Riparian Reserve Scenario 1 (instead of Scenario 2) were that:

[107] 1994 FSEIS, Appendix B-11, p B-143 -145.
[108] 1994 ROD p B-13.

Wider buffers would benefit terrestrial wildlife and improve species viability ratings, including for spotted owls, marbled murrelets, and many other species such as those on the survey and manage list.[109]

… Two of these benefited species - the spotted owl and marbled murrelet - were already listed as "threatened" under the ESA when the NWFP was approved.

Riparian Reserves are Important for Marbled Murrelets

Marbled murrelets are a "threatened" seabird that nest on large mossy limbs of mature and old-growth trees located within about 50 miles of the coast. Like spotted owls, marbled murrelets also depend disproportionately on lower slopes and riparian forests. FWS' 1997 Recovery Plan for the Marbled Murrelet says "With respect to slope, eighty percent of nests in the Pacific Northwest were located on the lower one-third or middle one-third of the slope."[110] Hamer and Nelson (1995) show that the mean distance to streams from marbled murrelet nests in the Pacific Northwest is 159 meters.[111]

In California, Baker et al. (2006) found that marbled murrelet nest sites "were located closer to streams, had a greater basal area of trees >120 cm dbh, and were located lower on slopes than random sites based on analysis of variance models." Baker (2006) states:

> We found that nest sites were much closer to streams than would be expected based on randomly available sites within old-growth forests. Nest sites may have been located near streams because these sites afforded murrelets better access from at-sea flyways. Studies have found proximity to streams or other openings to be important for murrelet nesting in other regions as well (Hamer and Nelson 1995, Meyer et al. 2004, Zharikov et al. 2006).[112]

In British Columbia Burger & Chatwin (2002) found that "[f]orests bordering major stream channels provided high quality nest habitat for murrelets, with large

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[109] 1994 FSEIS, Appendix J2; 1994 FSEIS, Appendix B11, pp. B-143 – B-145. Martin Raphael. 2012. The Function of Riparian Reserves for Terrestrial Species – What Was the Intent? http://ecoshare.info/wp-content/uploads/2013/01/Raphael-buffers.pptx

[110] USFWS 1997. Marbled Murrelet Recovery Plan, p 32. http://ecos.fws.gov/docs/recovery_plans/1997/970924.pdf

[111] Thomas E. Hamer & S. Kim Nelson. 1995. Chapter 6: Characteristics of Marbled Murrelet Nest Trees and Nesting Stands. USDA Forest Service Gen. Tech. Rep. PSW-152. 1995. http://www.fs.fed.us/psw/publications/documents/gtr-152/chap6.pdf.

[112] Baker, L.M., Peery, M.Z., Burkett, E.E., Singer, S.W., Suddjian, D.L., And S.R. Beissinger. 2006. Nesting Habitat Characteristics of the Marbled Murrelet in Central California Redwood Forests. The Journal of Wildlife Management (70(4) 939-946. https://www.cnr.berkeley.edu/beislab/BeissingerLab/Steve'%20Publications/Baker_et_al_2006.pdf

> trees, high epiphyte cover and many potential nest platforms. Detections of murrelets were also highest along stream beds …"[113]
>
> Increased regeneration harvest within riparian reserves is in direct conflict with FWS' 1997 Recovery Plan for the Marbled Murrelet which recommends that mature forests within "secured areas" (such as riparian reserves) be protected so they can serve as future nesting habitat for the marbled murrelet.[114] This recovery plan recommendation is not about *existing* high quality habitat, but about mature forests that can serve as future recruitment habitat. These 80-120 year-old maturing forests are precisely those targeted for logging in many recent policy proposals, such as the BLM Secretarial Pilots,[115] and the federal legislation proposed by Representatives DeFazio, Walden, and Schrader.[116]

An appendix to the NWFP EIS explained some of the reasons that the current boundaries of Riparian Reserve were adopted and the process for possible adjustments:

> The following standards and guidelines were developed in response to public and internal comments to increase protection of habitat for species whose habitat assessments were relatively low under Alternative 9.
>
> Riparian Reserve Scenario 1 will be applied on intermittent streams throughout the range of the northern spotted owl. … [T]he prescribed Riparian Reserve widths for intermittent streams may be adjusted in decisions following watershed analysis. **That analysis should take into account all species that were intended to be benefited by this standard and guideline. Those species include fish, mollusks, amphibians, lichens, fungi, bryophytes, vascular plants, American marten, red tree voles, bats, marbled murrelets, and northern spotted owls.** The specific issue for spotted owls is retention of adequate habitat conditions for dispersal. … [R]iparian protection in Adaptive Management Areas should be comparable to that prescribed for other federal land allocations. However, in those cases where alternate means are proposed to meet riparian objectives, those alternate means must meet objectives for management of all species. In areas where there are concerns about species as noted above, **species protection takes**

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[113] Burger, A.E., and T.A. Chatwin. 2002. Multi-scale studies of populations, distribution and habitat associations of Marbled Murrelets in Clayoquot Sound, British Columbia. Ministry of Water, Land and Air Protection Victoria, BC. March 2002. http://env.gov.bc.ca/wld/documents/techpub/mamuwebs.pdf

[114] USFWS 1997. Recovery Plan for the Marbled Murrelet. http://ecos.fws.gov/docs/recovery_plans/1997/970924.pdf

[115] Oregon Wild 2011. Scoping Comments on the Wagon Road and Roseburg BLM Secretarial Pilots. http://www.oregonwild.org/oregon_forests/forest-management/in-your-forests/files-for-eyes-on-the-agencies/Wagon_Road_and_Roseburg_Pilots_scoping_6-29-2011_BLM.pdf

[116] Oregon Wild 212. Problems and Pitfalls Associated with the Proposed "O&C Trust, Conservation, and Jobs Act" Version 1.3, June 5, 2012. http://www.oregonwild.org/oregon_forests/old_growth_protection/westside-forests/western-oregon-s-patchwork-public-lands/O-C_Trust_Act_White_Paper_FINAL_6-5-2012_w_DeFazio_response.pdf

> **priority over any objectives that would reduce reserves, and adjustments to Riparian Reserves should take into account all species that were intended to be benefited** by this standard and guideline.[117]

Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

The State of Oregon in its comments on the DEIS asked the BLM to analyze the number of murrelet sites on BLM land adjoining private and state lands in order to analyze the potential impacts of BLM logging portions of these sites and whether the burden for site conservation would be shifted to the private or state land owners. In response the BLM, argues that it has no reasonable way to predict what private land owners will do on their land so this analysis is useless. This is incorrect. Under the NWFP, the BLM and Forest Service routinely assumed that private forest lands would be clearcut on a 40 year rotation. This assumption can be made here as well, and would better inform the impacts to known murrelet sites that are near private lands. BLM's failure to do so leaves an important aspect of the environmental impacts of its action unaddressed and unanalyzed contrary to the requirements of NEPA.

In the FEIS/PRMP, the BLM arbitrarily limited its survey requirements for marbled murrelets to 35 miles inland despite evidence in Oregon that murrelets nest up to 47 miles inland. In response to a comment identifying this flaw, the BLM states that relatively few nest sites would be lost on BLM lands that are from 35 miles to 50 miles inland. The BLM cannot know this absent surveys, and this unsupported assumption violates both the marbled murrelet recovery plan, the BLM's BSS policy, and NEPA.

J. Deer and Elk

The BLM claims that the availability of early seral habitat is the primary limiting factor in deer and elk population numbers. However, the BLM is planning extensive salvage logging under the PRMP which would degrade naturally created early-seral habitat for these ungulate species. The BLM has not weighed the trade-offs between not salvage logging and not artificially creating early-seral habitat and the potential impacts these tradeoffs could have in the various contemplated alternatives for these species. This analysis would be very useful to inform the hunting community on the impacts of the PRMP to these species. The failure of the BLM to take a hard look at this issues and the trade-offs involved is a violation of NEPA.

K. Sage Grouse

The Klamath Falls Field Office was not included in the recent Sage Grouse planning effort in the Lakeview District, however, there are BLM directives that sage grouse would be

[117] 1994 FSEIS, Appendix B-11, p B-143 -145 (emphasis added).

reintroduced to the Gerber Reservoir area where they once existed around the early 1990s. Habitat improvement for unoccupied sage grouse habitat is ongoing but needs to be affirmed in the PRMP. The PRMP authorization of livestock grazing for potential reintroduction areas in the Klamath Falls field office must be reconsidered. Some allotments and pastures may need to have 'no grazing' (Alt D) to ensure success of sage grouse reintroduction. The State Director was wrong for not establishing a schedule for the re-introduction of sage grouse in the Klamath Falls Field Office.

X. RESERVES NOT ADEQUATELY PROTECTED

BLM says it "would conduct thinning in most of the reserves to reduce the risk of uncharacteristic wildfires and reduce potential wildfire spread and intensity under all action alternatives (USDI BLM 2015, pp. 914–916)." BLM did not take a hard look at how extensive logging in reserves would adversely affect the function of reserves in terms of conserving listed and unlisted late successional species, including spotted owls. Logging in reserves will reduce canopy cover, reduce thermal buffering, increase the risk of predation, and reduce recruitment of snags and dead wood that are essential habitat for numerous late successional wildlife species. The FEIS/PRMP did not address comments showing that the benefits of logging to reduce fire hazard are vastly over-estimated. Habitat degradation caused by logging for fuel reduction will greatly exceed the alleged benefits from such logging yet the FEIS/PRMP improperly does not disclose this. *See* Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. V 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf

XI. FIRE AND FUELS

The loopholes allowing logging in reserves that would degrade habitat for late successional wildlife in order to reduce the risk of fire are arbitrary and capricious in light of the FEIS/PRMP Appendix D which "… examined the MTBS data for any obvious temporal trends in wildfire severity, but did not detect a strong signal (**Figure D-6**). Over the course of 25 years, there appears to be a slight increase in the percentage of area burned by low and moderate severity wildfire, and a slight decrease in the percent of area burned in high severity wildfire, although these trends are not statistically significant." RTC 115, FEIS/PRMP at 1895 (citing FEIS Appendix D and referring to fires within the range of the northern spotted owl). Public comments explained in detail why logging to reduce the adverse effects of fire will have adverse effects on habitat far exceeding the effects of fire alone. *See also* Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. V 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf.

BLM also fails to account for the well-recognized increased fire risk caused by regeneration harvest. Allegedly reducing fire hazard in dry forests does not compensate for widespread increase in fire hazard in moist forests from regeneration harvest. *See* RTC 5, FEIS/PRMP at 1836-37. BLM takes credit for thinning that it says will reduce fire hazard in dry

forests, *see* RTC 122, FEIS/PRMP at 1898-99, but fails to take a hard look at the fact that regeneration harvest in moist forest under the PRMP will create fuel types that are less resilient and more susceptible to high severity fire. The failure to address this issue was discussed in detail in public comments and is arbitrary and capricious. Treating activity fuels will not change the fact that regeneration harvest followed by replanting of conifers will create fuel profiles that are dense, spatially contiguous, and close to the ground. These are very hazardous fuel conditions. Rotational forestry in the timber management areas means that these hazardous fuel conditions will cover a large fraction of the time at any given site and a large fraction of the area subject to timber management, especially areas subject to regeneration harvest.

The FEIS oversimplifies the relationship between logging and fire, claiming that lower density stands tend to have higher fire resistance. The FEIS also adopts the oversimplified notion that fire exclusion increases fire hazard. For example, the FEIS says:

> Uneven-Aged Timber Area [and] the Owl Habitat Timber Area … Both of these management scenarios would result in the greatest reduction of low and moderate stand-level resistance and the largest increase in the mixed- and high-resistance acres.

BLM failed to respond to public comments indicating that these assertions are not supported by the evidence from SW Oregon. The FEIS thus fails to reflect the best available science which indicates that open stands (such as those resulting from thinning) tend to have more surface and ladder fuels (over time), as well as greater wind penetration, lower humidity, dryer fuels, longer flame lengths, and higher fire intensity at the flame front. Forests with a dense canopy tend to have a more cool, moist, and less windy fire microclimate, and the canopy helps suppress the growth of surface and ladder fuels.

The FEIS also fails to reflect use of the best available information indicating that greater time-since-fire actually increases fire resistance. That is, fires are likely to burn more severely in forests that have been more recently logged or burned, and are likely to burn less severely in closed-canopy forests that have not been recently logged or burned. This may be related to the fact that closed canopy forests maintain a cool-moist microclimate that helps retain higher fuel moisture and more favorable fire behavior. Canopy cover also helps suppress the growth of ladder fuels. The significance of this is that it may make sense to variably retain more canopy cover while thinning and limiting treatment of canopy fuels except to provide some well-spaced "escape hatches" for hot gases generated by surface fires. The FEIS/PRMP, however, does not address or consider this highly relevant issue.

Odion et al (2004) studied fire in the Klamath Mountains region and found:

> Long absence of fire predicts low severity fire effects. Absence of fire enables closed canopy forest vegetation to replace shrub and open forest vegetation through succession. Shade reduces available fuel below the canopy as well as its potential surface heat output during fire events, making canopy fires less likely to

> occur. Therefore, severe fire effects are not correlated with the age of woody fuels. Instead, weather and climate dictate canopy fire behavior in closed canopy forests.
>
> …
>
> Tree plantations, which typically follow high-severity fires under traditional forestry practices, exhibited "twice the burn severity" of closed canopy forests (20 percent), even though they accounted for only four (4) percent of the study area. The relative combustibility of structurally homogeneous tree plantations supports a self-reinforcing "feedback" dynamic of high-severity fires, and the authors anticipate continued high-severity fires in roaded and planted portions of the landscape.
>
> …
>
> IMPLICATIONS
>
> The central conclusion of the paper is that long absence of fire predicts low-severity fire effects in Klamath mixed evergreen forests. This conclusion has four management implications:
>
> 1. The fuel build-up model formulated for southwestern ponderosa pine forests does not apply to Klamath mixed evergreen forests, and fuel treatments intended to prevent crown fires based on this model are misdirected.
>
> 2. Fuel treatments designed to impose a low-severity fire regime may be ecologically detrimental because highly severe fire effects, to some degree, support diverse vegetation community structures and habitats for which the Klamath region is globally unique. Some fuel treatments also may adversely affect soils, water quality, wildlife habitat, and spread noxious weeds.
>
> 3. Fuel treatments may be ecologically beneficial in tree plantations where past logging left behind unnatural fuel profiles.
>
> 4. Naturally ignited wildland fires may be beneficial to a variety of conservation objectives in Klamath forests. Home ignitability mitigation in the wildland-urban interface may increase options for backcountry wildland fire use.

Odion, D.C., E.J. Frost, J.R. Strittholt, H. Jiang, D.A. DellaSala and M.A. Moritz. 2004. Patterns of fire severity and forest conditions in the western Klamath Mountains, California. Conservation Biology 18(4): 927-936. http://nature.berkeley.edu/moritzlab/docs/Odion_etal_2004.pdf.

Raymond (2004) found that “A greater percentage of pre-fire fine wood was consumed in the thinned plots than in the unthinned plots during the Biscuit fire suggesting that fine fuel

moisture may have been lower in the thinned plots." And "the Biscuit Fire was observed to have more moderate fire behavior in stands with a sub-canopy tree layer compared to more open stands, suggesting that the sub-canopy trees did not function as ladder fuels. … Higher foliar moisture of broad-leaved species could have dampened fire behavior, inhibiting rather than aiding crown fire initiation." Crystal L. Raymond. 2004. The Effects of Fuel Treatments on Fire Severity in a Mixed-Evergreen Forest of Southwestern Oregon. MS Thesis. http://depts.washington.edu/nwfire/publication/Raymond_2004.pdf.

BLM says there is "compelling anecdotal evidence" that logging moderates fire behavior. It is widely recognized that anecdotal evidence is the least reliable and therefore the least compelling type of evidence, especially as compared to published and peer-reviewed scientific evidence. BLM cannot rationally rely on anecdotes to justify fuel reduction logging when more relevant scientific evidence is available. BLM must disclose the short-comings of anecdotal evidence. *See* V. Sit and B. Taylor, eds., Statistical methods for adaptive management studies. B.C. Ministry of Forests Research Branch, Victoria, B.C. http://www.for.gov.bc.ca/hfd/pubs/docs/lmh/lmh42.htm.

http://www.for.gov.bc.ca/hfd/pubs/docs/Lmh/Lmh42.pdf. (Chapter 9: Marcot, B. G. 1998. *Selecting appropriate statistical procedures and asking the right questions: a synthesis*. Pp. 129-142). For example:

> "A few key sources of evidence for the manager to know about— listed here in increasing order of reliability— include anecdotes and expert judgement, retrospective studies, nonexperimental (observational) studies, and experimental manipulation." (Marcot p. 133.)
>
> "As a whole, anecdotal information should be used with a great deal of caution— or at least with rigorous peer review— to help avoid problems such as motivational bias. (Marcot p. 133.)
>
> "[E]xpert judgement cannot replace statistically sound experiments." (Marcot p. 133.)
>
> "Anecdotes and expert judgment alone are not recommended for evaluating management actions because of their low reliability and unknown bias." (Marcot p. 133-34.)

The FEIS/PRMP does not address several serious flaws identified in public comments on the DEIS. For example, the FEIS over-estimates the value of logging and under-estimates the value of forest conservation with respect to fire hazard. This causes BLM to over-emphasize logging and under-emphasize conservation in the PRMP. Comments on the DEIS said:

Regen Harvest Reduces Fire Resiliency

The EIS did not adequately disclose the extent to which regen logging will convert naturally resistant and resilient mature forests into tree plantations which have a dense homogenous fuel structure close to the ground and represents a significant fire hazard.

Logging in many cases will actually increase fire hazard, but the EIS does not fully account for the impacts on wildlife. DEIS Figure 3-40 and 3-41 clearly show that timber management areas tend to have fuel conditions with greater fire hazard compared to the reserves where forests are better conserved. The DEIS does not carry this analysis forward into the analysis of effects on the northern spotted owl habitat (and numerous other wildlife that prefer to live in dense forests). Based on the fuel conditions created by logging, fires will likely be larger and more severe. There will likely be spill-over effects from the harvest areas to the reserves. The EIS needs to more fully disclose the adverse effects of logging on spotted owls.

…

DEIS (p 159) also says "Comparing recent satellite imagery of western Oregon with that collected in the mid-1990s, Reserves with minimal or no active management tended to become homogeneous with respect to stand density, age, and condition. Such landscapes appear to be increasingly vulnerable to large, stand-replacing fire" This is highly speculative, misleading, and not supported by any evidence.

First, reserves were intended to be spatially distributed and redundant, so that the system of reserves could absorb large disturbance events and still function. See Jerry Franklin's statements following the Biscuit Fire.

Second, mature forests are less vulnerable to fire, while dense stands of young trees are more vulnerable to fire, so it's really the timber management areas with abundant areas of young reprod that pose the greatest fire hazard. (See the science excerpts below.)

Third, the assertion that large reserves are more vulnerable is contradicted in the DEIS. DEIS (p 194) admits that:

> The High Intensity Timber Area includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity

> fire. … [T]here currently exists an overabundance of young and closed conditions and the likelihood of large, high severity fire has increased. Large areas of no retention are not representative of the prevailing vegetative patterns and structure associated with frequent fire, low-severity or mixed-severity fire regimes (Taylor and Skinner 2003, Larson and Churchill 2012).
>
> …
>
> Moderate Intensity Timber Area includes thinning and regeneration harvest with 5-15 percent basal area retention, and longer rotations and rapid reforestation. This management approach would result in more continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. Additionally, contiguous fuel profiles have reduced stand-level fire resistance.

Contrary to popular belief, old forests present much less of a fire hazard compared to dense young plantations resulting from regen harvest. Older forests spend most of their lifecycle in a condition of tall trees where most of the fuels are held high above the ground and relatively unavailable for combustion by surface fires. Mature forest canopies also help maintain cool, moist conditions, reduce wind speeds, and suppress the growth of ladder fuels. Regen harvest results in young forests of short-stature where the fuels are densely packed and close to the ground where they are available for combustion and present more of a hazard.

"Large blocks of old-growth forests – rather than large contiguous blocks of young growth or highly simplified forests – are the best scenario for reducing catastrophic wildfire." Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf.

As discussed above, the FEIS/PRMP fails to rationally address these issues.

XII. ECONOMICS

BLM discounts the value and significance of non-market values in its economic analysis by saying "Non-market values reflect the importance people place on goods and services for which they do not have to pay real money … ." RTC 252, FEIS/PRMP at 1946. This bias for "real money" discounts valid and well-recognized economic information and analyses without a rational explanation. It also reinforces the timber industry's mantra that non-market values are in some way less real and less valid than material that is monetized. BLM cannot so lightly or rationally dismiss non-market values that are real and significant, often involve life and death

consequences, and have been studied and documented. There is no market for root strength, but people die when landslides come ripping out of clearcuts. There is not a well-developed market for avoided carbon emissions, but people all over the world are suffering severe health consequences from global climate change. A major report on managing the health effects of climate change was produced jointly by 'The Lancet' and UCL in May 2009. The report says among other things:

> Climate change is the biggest global health threat of the 21st century. … Even the most conservative estimates are profoundly disturbing and demand action. … Effects of climate change on health will affect most populations in the next decades and put the lives and wellbeing of billions of people at increased risk. … Estimates show that small increases in the risk for climate-sensitive conditions, such as diarrhoea and malnutrition, could result in very large increases in the total disease burden. … Malaria, tick-borne encephalitis, and dengue fever will become increasingly widespread. … As people migrate away from areas deteriorated by gradual warming or destroyed by extreme weather events, they not only place substantial demands on the ecosystems and social infrastructures into which they migrate, but also carry illnesses that emerge from shifts in infectious-disease vectors. … Management of the health effects of climate change will require inputs from all sectors of government and civil society … Luxury emissions are different from survival emissions, which emphasises the need for a strategy of contraction and convergence, …

http://www.ucl.ac.uk/news/news-articles/0905/09051501/. BLM's treatment of this and other relevant economic issues is irrational and arbitrary. BLM's failure to rationally address these issues is described in greater detail in the attached "Points for Supplement to Protest of the BLM's Proposed Resource Management Plan/Final Environmental Impact Statement: Western Oregon," prepared by Ernie Niemi of Natural Resource Economics, Inc. These additional protest points were addressed in comments on the DEIS and are incorporated into this protest by this reference as though fully set forth herein.

BLM failed to rationally address in the FEIS/PRMP comments on the DEIS explaining that extensive and very significant external costs of logging skew prices and inflate demand for wood products and otherwise skew normal market functions. *See* RTC 266, FEIS/PRMP at 1951. This distortion results in several problems such as over-supply of timber (too much logging), and under-supply of non-market public goods and services (too little clean water, habitat, carbon storage, recreation, scenery, etc.). BLM's response that "Timber markets, like other commodity markets, are organic frameworks that operate with little structure other than to establish terms of trade. They seek to cover production costs of suppliers and to reduce factor costs of production," reinforces rather than addresses the problem identified by commenters. Producers seeking to "cover the costs of production" are covering only a small fraction of the true costs of production. Producers' (including BLM's) costs, and the prices they charge for timber, do not cover the full costs of water pollution, habitat degradation, global warming and

ocean acidification, loss of recreation, loss of scenery, etc. These costs of timber production are shifted onto the public. Producers (including BLM) seeking to "reduce factors costs" are motivated to shift costs from themselves and their customers to others, such as those that prefer clean water, intact habitat, quality of life, and climate stability.

The Response to Comment goes on say "[C]ompetitive markets, which represents the highest standard for establishing prices, market failures in the western Oregon timber markets do not constitute a substantial issue that would alter the analysis of effects of the alternatives on timber supply and demand as analyzed in the Draft RMP/EIS." FEIS/PRMP at 1952. This conclusion is irrational and contrary to an extensive body of well-recognized economic analyses and information that BLM does not address. BLM failed to take a hard look at this issue as required by NEPA. Public comments established that these market imperfections are very significant. More than a century of "competitive markets" have so utterly failed that hundreds of miles of forest streams are water quality limited; numerous species of fish & wildlife are threatened or endangered; and we have a global climate problem which was caused in part by liquidation of old growth forests on BLM lands. During the last century, the spotted owl region contributed more than 100 times more carbon to the atmosphere due to land use than the global average. If markets were working properly, resources would have been allocated efficiently and these problems would not have occurred. BLM is failing to see and address a very significant problem.

BLM is thus not selling timber at "reasonable prices" on a "normal market" as contemplated by the O&C Act yet BLM does not rationally account for these relevant factors in its analysis in the FEIS/PRMP by, for example, adjusting its harvest land base and estimate of the "sustained yield" of forest production in order to account for market distortions and provide more habitat, more carbon storage, more stream protection, more recreation, and more scenic values to meet unmet demand for these important public goods.

BLM also failed to quantify non-market economic values making it difficult or impossible for the public and the decision-maker to make apple-to-apples comparisons of the effects of different approaches to logging and conservation. Public comments said: "The DEIS failed to integrate the extensive analysis of timber economics with these non-consumptive and non-market economic values. It is critical that the FEIS provide some way of comparing the economic value of conservation versus logging. If the FEIS puts a dollar value on timber, but leaves non-market values unquantified, the unavoidable effect will be to artificially elevate the importance of timber and devalue non-market economic benefits of conservation." This problem has not been corrected in the FEIS and BLM has failed to address these economic issues rationally and in light of the extensive body of available economic evidence. The issues discussed above are also described in greater detail in the attached "Points for Supplement to Protest of: BLM's Proposed Resource Management Plan/Final Environmental Impact Statement: Western Oregon – The BLM's Failure to Describe the Negative Economic Impacts of Logging," and in "Points for Supplement to Protest of: BLM's Proposed Resource Management Plan/Final Environmental Impact Statement: Western Oregon – BLM's Failure to Describe Accurately the

Benefits and Costs of Logging," prepared by Ernie Niemi of Natural Resource Economics, Inc. These additional protest points were addressed in comments on the DEIS and are incorporated into this protest by this reference as though fully set forth herein.

XIII. COMMUNITY STABILITY

One of BLM's purposes as set forth in the FEIS/PRMP is to increase certainty for timber harvest but this purpose makes little sense given BLM's admission that timber markets are volatile regardless of whether BLM sells a steady flow of timber. As BLM says, "industries tied to commodity markets—like wood products —can be vulnerable to highs and lows not experienced by some industries. Steady timber harvests may eliminate one factor of industry volatility, but it cannot fully offset the volatility of commodity markets that are central to these timber-based firms." RTC 278, FEIS/PRMP at 1957. BLM is acting arbitrarily and capriciously by failing to recognize that it could do more to recover endangered species, avoid water pollution, stabilize communities, protect watersheds, provide recreation, and provide favorable water flow, and that this would increase certainty for forest and stream conservation and maximize carbon storage thereby actually increasing community stability. BLM's actions in this regard are also contrary to law.

BLM under-estimated the full extent of the adverse effects of timber industry volatility on communities in western Oregon. BLM used nation-wide data to analyze industry volatility, but the Response to Comment says "national patterns are likely to represent a lower bound of growth-rate volatility for timber sectors in western Oregon." RTC 278, FEIS/PRMP at 1957. Public comments raised the concern that the adverse effects of timber industry volatility are most pronounced and most negative as experienced by small communities that are disproportionally dependent on timber industry. BLM did not address this evidence or acknowledge that the available evidence indicates it could do more to stabilize these communities by focusing on providing high quality of life that helps attract diverse industries that do not tend to so regularly boom and bust.

BLM refuses to reconsider its erroneous conclusion that alternatives with more timber harvest result in relatively greater economic benefits. BLM fails to integrate all the economic considerations, such as the fact that more logging means more economic volatility and more carbon emissions with greater social cost of carbon. BLM justifies its erroneous conclusions based on the outdated views of local leaders that do not reflect the best available evidence. The Response to Comment says "The Interview Summary and Conclusions section of Issue 5 (Capacity and Resiliency) noted that, 'With respect to the BLM's impacts, the way the BLM manages timber is by far the number one issue of concern among the communities. The primary concern is economic'…" RTC 283, FEIS/PRMP at 1960. BLM has a duty to rationally examine this concern and determine the extent to which – if any – it is supported by the available evidence. It does not have a duty to simply report this concern and respond to it regardless of the evidence. BLM's actions in this regard are arbitrary and capricious in light of all the evidence.

The PRMP also is contrary to law because its emphasis on timber production will destabilize communities and industries in violation of the O&C Act and has led BLM to develop and consider an inadequate range of alternatives in the FEIS/PRMP.

BLM is emphasizing "sustained yield" timber production in a way that is contrary to the applicable legal standards while sacrificing opportunities to increase production of other legally protected values even though the FEIS clearly shows that the economic value of recreation, water quality and quantity and carbon storage on BLM lands greatly exceed the value of wood products. For example, timber production and carbon storage conflict with each other. Alternatives that increase logging and increase timber revenue, sacrifice economic benefits of carbon storage that vastly exceed the value of wood products. Furthermore, increased logging tends to be destabilizing to local communities as noted above, while emphasizing non-consumptive ecosystem services will tend to have a stabilizing economic influence. Consistent with the multiple legal standards that apply to the lands covered by the PRMP, BLM should maximize the overall economic benefits of forest production from its lands by minimizing logging and emphasizing non-consumptive values like clean water, carbon storage, biodiversity conservation, and low impact recreation.

The FEIS perpetuates a false dichotomy: timber jobs vs recreation jobs. The FEIS fails to reflect the fact that "recreation" is far too narrow a view of the economic alternative to logging, because forest conservation provides economic benefits across virtually every sector of the economy. It is more accurate to recognize that Oregon's greatest economic asset is our quality of life which offers a "second paycheck" to every Oregonian and attracts high quality workers and diverse new businesses that want to hire those people. The FEIS does not fully disclose or describe the fact that conserving BLM forest contributes to Oregon's quality of life, while timber harvest degrades habitat, water quality, climate stability, scenic views, and harms Oregon's quality of life. The choice is not timber versus recreation, but rather, timber versus every other economic sector in the state that depends very much on the flow of these ecosystem services to support its diversified economy. Many of the tables in the socio-economic section of the EIS are labeled "total jobs" even though the FEIS really only looked at timber jobs and recreation jobs, and failed to disclose amenity-induced job creation. "Total jobs" should not be used to describe jobs in just two sectors of the economy. The EIS makes several statements about conservation alternatives causing "disproportionately negative economic effect" for certain counties, but these conclusions do not consider all of the economic factors or even all of the job creation factors.

BLM says that changes in timber harvest are the primary influences on projected future BLM-based employment and earnings in local economies in the planning area. This is because changes by alternative for other resources are either unavailable or very small. There are several problems with this conclusion:

- The conclusion that BLM can positively influence the local timber economy is brought into question by the fact that the timber industry is volatile, declining, and subject to a wide range of forces beyond BLM's control as BLM acknowledges elsewhere:

> "commodity-based industries are subject to the highs and lows of business cycles not only in the United States, but also internationally."

- BLM assumes inappropriately that recreation and other economic sectors are insensitive to logging on BLM lands. This ignores the fact that logging degrades not only the recreation experience, but also degrades a wide variety of ecosystem services and amenity values that must be carefully conserved in order to sustain and grow other sectors of the economy. BLM needs to disclose the fact that the overall economy is likely to thrive, not just "in spite" of reductions in federal log supply caused by increased emphasis on conservation, but "because" of greater conservation of public lands. *See* Neimi, Whitelaw, & Johnston 1999. The Sky Did NOT Fall. ECONorthwest. http://pages.uoregon.edu/whitelaw/432/articles/SkyDidNotFallFull.pdf

- This conclusion also ignores the adverse effects of volatility in the wood products sectors, which diminishes the social value of jobs in those sectors and adds to a variety of costly social problems related to job insecurity. The FEIS admits that "If industries increase that exhibit historic instability, they may inject greater economic instability into their host communities" but BLM does not analyze or disclose relevant and available data related to this statement.

BLM also says the expansion of existing timber-based firms or the addition of new ones would bring additional jobs and earnings to the planning area, but could make the whole planning area more vulnerable to large fluctuations inherent in domestic and international timber markets. This statement seems to imply that volatility may adversely affect the region but benefit local communities. This is exactly backwards. The FEIS failed to look at the adverse effects of volatility at the local level. Volatility would have its greatest effect in local communities that have the lowest levels of economic diversity, the greatest dependence on commodity production, and would therefore see the greatest fluctuations in jobs and income. The gain and loss of jobs caused by timber industry volatility would cause a variety of social problems related to job insecurity, depression, substance abuse, health care insecurity, domestic abuse, etc. which would in turn cause an increase in the demand for social services that are not adequately funded. The FEIS does not describe or disclose the extent to which (or disclose at all that) the development of less volatile economic sectors through provision of amenities instead of commodities, would ameliorate the social problems described above and hence would diminish demand for costly social services.

The view that more logging on federal land is good for communities is based on an outdated view that is not supported by the available and relevant economic and socioeconomic information. For example, the NWFP monitoring results found that:

> Assumptions were challenged regarding both socioeconomic and ecological relationships, with implications for both. One of the more important set of findings concerns the role of the federal lands. From a socioeconomic perspective, it was assumed that timber flow from federal lands was a key determinant of

> community well-being. This turns out to be true in some communities, but not in most.
>
> [draft synthesis of the NWFP 10-year monitoring reports. 4-15-05. pp 13-14]
>
> Historically, employment in solid-wood products manufacturing (SIC 24) has been volatile. ... Over the entire period of 1965 through 2000, employment positively or negatively changed more than 5 percent 13 times between successive years. Since 1991, changes in employment between years have generally varied between 1 and 2 percent, with a high of a 4-percent decline in 1996.

USDA/USDI. 5-volume Northwest Forest Plan, 10-Year Socioeconomic Monitoring Report, http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf pp 40-41

The FEIS failed to disclose that increasing federal timber supply will not prevent the overall declining trend of employment in the timber industry. Only "[a]bout 400 of the 11,000 jobs lost in the timber industry since 1994 were based on reductions in timber harvesting on federal lands. The remaining 10,600 job losses occurred during a period of an increased log supply and were the result of less efficient mills closing and mills continuing to invest in labor-saving technologies. … The FS and BLM no longer play significant roles in the supply of timber in the Plan area as a whole." Id. (10-Year Socio-Economic Report) at 46-47. http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf

The available evidence shows that increased logging threatens the economic stability of local communities by: recoupling counties to the boom-bust timber industry, by increasing local communities dependence on a volatile and declining industry, and by reducing the quality of life that helps sustain and grow a more healthy and diverse economy. Logging is a boom-bust industry that undermines community stability rather than enhancing it. The FEIS/PRMP fails to comply with the O&C Act's mandate to foster community stability when it could do so by increasing forest conservation which helps stabilize communities by enhancing quality of life and helping to diversify the economy so communities are less dependent on the inherently volatile timber industry.

The FEIS needs to consider the economic impacts of shifting the regulatory burden to non-federal lands, and the economic costs of increasing communities' dependence on the inherently boom-bust timber industry. The Northwest Forest Plan and ESA protections allow private timber owners to continue logging with fewer environmental restrictions. If BLM disengages from the Northwest Forest Plan, then private logging may have to be restricted. This could cause uncertainty and instability for local communities and industries. BLM's NEPA analysis must explicitly address this cause-effect relationship on community stability but it fails to do so.

The issues of community stability described above are discussed in greater detail in the attached "Points for Supplement to Protest of: BLM's Proposed Resource Management

Plan/Final Environmental Impact Statement: Western Oregon -- The BLM's Failure to Describe the Negative Economic Impacts of Logging," and in "Points for Supplement to Protest of: BLM's Proposed Resource Management Plan/Final Environmental Impact Statement: Western Oregon -- BLM's Failure to Describe Accurately the Benefits and Costs of Logging," prepared by Ernie Niemi of Natural Resource Economics, Inc. These additional protest points were addressed in comments on the DEIS and are incorporated into this protest by this reference as though fully set forth herein.

XIV. SALVAGE LOGGING

BLM says, "Under the Proposed RMP, salvage harvesting would be permissible to recover economic value or minimize economic loss only in the Harvest Land Base." BLM has not provided a rational explanation or legal basis for allowing large-scale salvage logging in the harvest land base in light of the available evidence and the applicable legal requirements. While the scientific evidence indicates that salvage logging does not make ecological sense in any land allocation, this evidence shows that at a minimum BLM should retain a significant fraction of each salvage unit unharvested, even in the harvest land base. The FEIS/PRMP does not explain BLM's failure to do so. Forests in the harvest land base that were structurally complex before a fire (e.g., RA32) should be off-limits to salvage logging after the fire. As the available scientific evidence shows, this is necessary because allowing salvage logging of complex forests after they burn will result in conversion to plantations, simplification of forest structure, and a reduction over time in the extent of complex forests in the harvest land base. This will have long-term adverse effects on the ability to recover listed species like spotted owls and marbled murrelets, effects that the FEIS/PRMP fails to acknowledge.

The BLM's plan to conduct salvage logging in moderate and severely burned stands located in the Harvest Land Base conflicts with the best available science regarding how to achieve the stated purpose and need and management objectives concerning conservation of threatened and endangered species, economic stability of local communities, production of clean water and restoration of fire-adapted ecosystems. BLM was a cooperating agency in the Interior Columbia Basin Ecosystem Management Project which asked (and concluded):

> **Can salvage timber sales be compatible with ecosystem-based management?**
>
> … Our findings suggest that this type of harvesting is not compatible with contemporary ecosystem-based management. Ecosystem-based management would emphasize removing smaller green trees with greater attention to prevention of mortality rather than removal of large dead trees.[118]

[118] Quigley, Thomas M., tech. ed. 1996; The Interior Columbia Basin Ecosystem Management Project: Scientific Assessment.) Gen. Tech. Rep. PNW-GTR-382; Page 178.

The FEIS does not fully and accurately describe the benefits of retaining large dead trees and the benefits of natural recovery after natural disturbance, nor does the FEIS fully and accurately describe the adverse effects of salvage logging.

The direct and cumulative ecosystem impacts of logging up to 95% of green trees and snags in post-disturbance logging units within the Harvest Land Base is not fully analyzed or disclosed. The significant direct and cumulative impacts of fiber plantation establishment in salvage logged stands on fire hazard and fire behavior is not fully analyzed and disclosed.

The BLM fails to quantify when and where post-disturbance salvage logging in reserves would be allowed in order to "keep roads clear of debris." There have been recent incidences in Western Oregon of the BLM implementing post-disturbance roadside "hazard" logging up to 200' feet on the downhill side of logging roads, in which trees were removed that could never reach a roadway due to the laws of physics and gravity. The BLM fails to disclose whether clearcut salvage logging of alleged "hazards" will be allowed in streamside forests adjacent to roads. The proposed RMP fails to disclose the circumstances, effects or side-boards that would accompany roadside salvage logging in reserves. Will "green" trees be removed as part of the roadside logging process in reserves? Will roadside salvage logging occur in roads that have been closed within forest reserves?

Based on current ecological science, the FEIS/PRMP should – but does not – disclose that prohibiting post-disturbance salvage logging in all reserves (only allowing felling of imminent hazard trees in areas of high public use) is the scientifically supported way to meet the stated objectives for these reserves. Large dead trees, which are the target of salvage logging, are old growth structurally elements that provide significant ecological value even if they are not surrounded by green trees. Large snags provide "life boats" allowing many late successional organisms to persist in "young" forests. Science shows that best way to develop complex old forest is to maintain complex young forest and allow forest to regenerate naturally and move through succession without interference. Salvage logging is adverse to reserve objectives because it removes late successional habitat components that take a long time to develop once they are removed and creates atypical simplified habitat structures and patterns.

BLM also has failed to take a hard look at the issues of snag habitat and complex young forests by considering the dynamics of snags and dead wood in natural forests. Natural young forests are typified by large amounts of dead wood. Salvage logging results in atypical and undesirable ecological conditions:

> Spies et al. (1988) reported that amounts of CWD were high in the youngest successional stages, were lowest in 60-80-year-old forests, and were high in old stands (< 500 years). After 500 years CWD amounts declined to an intermediate level. Spies and Franklin (1988) reported that CWD input may be low in young

> stands because of the small size of dead and dying stems. Volumes in these stands are often high, however, due to residual CWD from the previous stand.[119]

Jerry Franklin's career studying old forests led him to the conclusion that salvage logging is not compatible with conservation of old growth ecosystems.

> There are implications for management of old-growth stands selected for perpetuation. Salvage logging is inappropriate since it removes at least two of the major structural components -dead and down- that are key elements of the system. In all likelihood, some of the more decadent, live trees would also be removed. Salvage logging is also inappropriate because of the damage inevitably done to root systems and trunks of the residual stand which results in accelerated mortality of trees and overall deterioration of the stand.[120]

Unsalvaged, naturally regenerated, young stands are one of the rarest forest types in the Pacific northwest, and their biodiversity rivals that of old-growth forests but BLM has failed to consider or implement measures that retain disturbance-created complex early seral habitat on BLM forest lands contrary to the available scientific evidence.

> Indeed, naturally developed early-successional forest habitats, with their rich array of snags and logs and nonarborescent vegetation, are probably the scarcest habitat in the current regional [Pacific Northwest] landscape.[121]

> "There has been a loss of diverse young forests on all ownerships. … Conservation of diverse young forests has received little attention in forest policy."

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[119] Lofroth, Eric. 1998. The dead wood cycle. In: Conservation biology principles for forested landscapes. Edited by J. Voller and S. Harrison. UBC Press, Vancouver, B.C. pp. 185-214. 243 p. http://www.for.gov.bc.ca/hre/deadwood/DTrol.htm.

[120] Franklin, J.F., K. Cromack, Jr., W. Denison, A. McKee, C. Maser, J. Sedell, F. Swanson, and G. Juday. 1981. Ecological characteristics of old-growth Douglas-fir forests. PNW-GTR-118. USDA Forest Service. PNW Research Station. February 1981.

http://www.fs.fed.us/pnw/pubs/gtr118part1.pdf

http://www.fs.fed.us/pnw/pubs/118part2.pdf

[121] Lindenmayer, David B. and Jerry F. Franklin. 2002. Conserving Forest Biodiversity: A Comprehensive Multiscale Approach. Island Press. Washington, DC: 69. *See also*, DellaSala, D.A., J.E. Williams, C. Deacon-Williams, and J.F. Franklin. Beyond smoke and mirrors: a synthesis of fire policy and science. Conservation Biology, Pages 976–986. Volume 18, No. 4, August 2004. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/17521/Beyond%20smoke%20and%20mirrors.pdf

Janet Ohmann; Science Findings, Issue 56; Seeing the trees for the forest: mapping vegetation biodiversity in coastal Oregon forests; (September 2003). http://www.fs.fed.us/pnw/sciencef/scifi56.pdf.

In the FEIS the BLM failed to consider and disclosed reasonable alternative approaches to salvage logging in timber management areas as modeled on the recommendations of the Beschta report. Specifically:

- prohibit post-fire logging AND roadbuilding on all sensitive sites, including: severely burned areas (areas with litter destruction), on erosive soils, on fragile soils, in roadless/unroaded areas, in riparian areas, on steep slopes, and any site where accelerated erosion is possible. We would add: Late-Successional and Riparian Reserves, and protective land allocations or designations including Botanical and Scenic River Areas;

- protect all live trees;

- protect all old snags over 150 years old;

- protect all large snags over 20 inches dbh;

- protect at least 50% of each size class of dead trees less than 20 inches dbh.[122]

BLM also failed to fully consider and analyze reasonable science-based alternatives for salvage logging that address the recommendations in at least the following publications:

- Society for Conservation Biology Scientific Panel on Fire in Western U.S. Forests. Reed F. Noss (editor), Jerry F. Franklin, William Baker, Tania Schoennagel, and Peter B. Moyle. *Ecological Science Relevant to Management Policies for Fire-prone Forests of the Western United States*. February 24, 2006. http://www.conservationbiology.org/sections/namerica/FireWhitepaper.pdf.

- *See also* Reed F. Noss (editor), Jerry F. Franklin, William L. Baker, Tania Schoennagel, and Peter B. Moyle. 2006. *Ecology and Management of Fire-prone Forests of the Western United States.* Society for Conservation Biology Scientific Panel on Fire in Western U.S. Forests.

[122] *See* Beschta RL, Frissell CA, Gresswell R, Hauer R, Karr JR, Minshall GW, Perry DA, and Rhodes JJ. 1995. Wildfire and Salvage Logging: recommendations for ecologically sound post-fire salvage logging and other post-fire treatments on Federal lands in the West. Corvallis, OR: Oregon State University. Available at: http://www.fire-ecology.org/science/Beschta_Report.pdf.

August 2006. http://www.conbio.org/images/content_policy/2006-8_SCB_NA_Statement_Wildland_Fire.pdf.

Proposed BLM direction in the FEIS (at 1903 and elsewhere) indicates that "[t]he ability to conduct salvage harvest for purposes of protecting human health and safety within the dry forest would be available under all alternatives." This authority would appear to allow widespread logging impacts that are neither analyzed nor disclosed in the FEIS. While we support felling of real and imminent hazard trees in areas that are frequently used by workers and the public (e.g., in developed recreation sites and along paved roads), the PRMP fails to limit hazard tree removal as an excuse for commodity extraction in areas that are not a high priority for hazard removal (e.g., remote locations where people visit infrequently and/or risk exposure is brief periods such as passing by large snags along a remote road or trail). This failure is inconsistent with the law and the available evidence.

The "Management Direction" regarding salvage logging is contrary to law and the available evidence for additional reasons. It urges BLM to "minimize commercial loss and deterioration" but it does not balance this objective with any of the significant trade-offs including: recovery of listed species, protecting soil, water and watersheds, mitigating the landscape shortage of large snags in the checkerboard lands, mitigating the temporal "snag gap" caused by stand replacing disturbance, community stability, future fire hazard, development of future complex habitat (early seral or late seral), or carbon storage. Salvage logging causes a host of adverse effects associated with logging in general, e.g., watershed degradation, erosion, sedimentation, road impacts, habitat fragmentation, soil compaction, visual blight, etc. Many of these effects are worse than green timber sales because the soil lacks structure and protection normally found in green forests.

Renowned fisheries expert James Karr said:

> … I joined eight other scientists to explore whether forests might be restored by logging soon after a fire. We had among us a wealth of knowledge across a wide range of fields. We pored over several decades of research but found nothing to show that fire-adapted forests might be improved by logging in the wake of a fire.
>
> In fact, we found just the opposite: Most plants and animals in these forests are adapted to periodic fires; they have a remarkable way of recovering – literally rising from the ashes.
>
> These forests have evolved with fire. Periodic fires have been part of a normal cycle lasting thousands of years. Logging a burned forest damages the soil, carrying away nutrients, robbing seedlings of moisture and clogging nearby

> streams. Trees in a burned landscape, both dead and alive, continue to provide homes for wildlife after a fire and form the building blocks of new forests.[123]

The post-fire science summary prepared by the World Wildlife Fund in 2006 also states:

> In general traditional forestry has viewed fire as bad and dead trees as a waste. These views have skewed public policies about post-fire logging. However, current scientific understanding recognizes that disturbance and dead trees are in fact critical to forest health. Of the approximately thirty scientific papers on post-fire logging and additional government reports published to date, not a single one indicates that logging provides benefits to ecosystems regenerating post-disturbance. In general, post-fire logging impedes regeneration when it compacts soils, removes "biological legacies" (e.g., large dead standing and downed trees), introduces or spreads invasive species, causes soil erosion when logs are dragged across steep slopes, and delivers sediment to streams from logging roads. Further, a large body of science on disturbance ecology (e.g., recent books on Mt. St Helens and studies in the Yellowstone Ecosystem and elsewhere) indicate that when natural disturbance events are preceded and/or followed by land management activities they often impair the recovery of forest ecosystems.[124]

In October 2013, 250 scientists signed a letter urging greater attention to the conservation of complex early seral forests and natural recovery after fire. These scientists conclude that the

> current state of scientific knowledge, … indicates that [salvage logging] would seriously undermine the ecological integrity of forest ecosystems on federal lands. … This post-fire habitat, known as 'complex early seral forest,' is quite simply some of the best wildlife habitat in forests and is an essential stage of natural forest processes. Moreover, it is the least protected of all forest habitat types and is often as rare, or rarer, than old-growth forest, due to damaging forest practices encouraged by post-fire logging policies. While there remains much to be discovered about fire in our forests, the scientific evidence indicates that complex early seral forest is a natural part of historical fire regimes in nearly every conifer forest type in the western U.S. (including ponderosa pine and mixed-conifer forests) … Numerous studies also document the cumulative impacts of post-fire logging on natural ecosystems, including the elimination of bird species that are

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[123] Karr, James. 2005 Nature doesn't benefit from logging fire-damaged lands | The News Tribune, Tacoma, WA. ftp://ftp2.fs.fed.us/incoming/r5/Klamath/Mt.HebronRestoration/MountHebron.Records/MtHebronRestoration.ProjectRecord/D.%20ScopingComments.Analysis/ArtleyAttachment9.FullArticles/Pub10.Karr2005.Tribune.pdf

[124] Dominick A. DellaSala 2006. POST-FIRE LOGGING SUMMARY OF KEY STUDIES AND FINDINGS. World Wildlife Fund, February 2006.

ftp://frap.cdf.ca.gov/pub/incoming/IMMP/Post%20Fire%20Salvage%20Logging%20Papers/Post%20Fire%20Logging%20Review%202006.pdf

most dependent on such conditions, compaction of soils, elimination of biological legacies (snags and downed logs) that are essential in supporting new forest growth, spread of invasive species, accumulation of logging slash that can add to future fire risks, increased mortality of conifer seedlings and other important reestablishing vegetation (from logs dragged uphill in logging operations), and increased chronic sedimentation in streams due to the extensive road network and runoff from logging operations."[125]

In light of the above and other scientific evidence, the FEIS failed to fully disclose or consider the following issues regarding approving a program of post-disturbance salvage logging:

a. The natural range of variability and existing rarity of complex young forests (e.g., young forests that are unsalvaged after disturbances). Since large snags are outside the natural range of variability across the landscape, the agency must retain all large snags to start moving the landscape toward the natural range of variability, or the agency must carefully justify in the NEPA analysis every large snag it proposes to remove. *See* Jerome J. Korol, Miles A. Hemstrom, Wendel J. Hann, and Rebecca A. Gravenmier. Snags and Down Wood in the Interior Columbia Basin Ecosystem Management Project. PNW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/049_Korol.pdf. This paper estimates that even if we apply enlightened forest management on federal lands for the next 100 years, we will still reach only 75% of the historic large snag abundance measured across the interior Columbia Basin, and most of the increase in large snags will occur in roadless and wilderness areas.

b. The ecological values (such as wildlife habitat) associated with snags, dead wood, and complex young forests. See Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 *in* ***Wildlife-Habitat Relationships in Oregon and Washington*** (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001) http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf

c. Given the regional deficit of young complex forests and the fact that many species, such as woodpeckers and secondary cavity users, appear to be adapted to exploit the structure and resources available within disturbed forests, the agencies should comprehensively consider and disclose the direct and indirect effects of

[125] Della Sala, D. et al (2013) Open Letter to Members of Congress from 250 Scientists Concerned about Post-fire Logging. October 30, 2013. http://geosinstitute.org/images/stories/pdfs/Publications/Fire/Scientist_Letter_Postfire_2013.pdf or http://www.scribd.com/doc/181401520/Open-Letter-to-Members-of-Congress-from-250-Scientists-Concerned-about-Post-fire-Logging-October-30-2013

salvage logging on species associated with young complex forests. The Forest Service has numerous Management Indicator Species whose populations have not been monitored, so the agencies lack the information necessary to that the salvage logging program will maintain species viability.

d. The effects of salvage logging on the development of complex forest habitat; "The early post-disturbance period of forest ecosystem development - pre-tree-canopy closure - is profoundly important!" because it is heterogeneous, light-energy rich, structure rich, biodiversity rich, and process rich. "**Removal of legacies is most profound long-term impact**" because of the "Importance of Coarse Wood:

- Habitat for species
- Organic seedbeds (nurse logs)
- Modification of microclimate
- Protection of plants from ungulates
- Sediment traps
- Sources of energy & nutrients
- Sites of N-fixation
- Special source of soil organic matter
- Structural elements of aquatic ecosystems"

Jerry Franklin - What is a 'Good' Forest Opening? – Powerpoint
http://courses.washington.edu/esrm315/Lectures/FranklinEarlySuccession.pdf

e. All the new science related to salvage logging and dead wood, including but not limited to: Beschta R.L., J.J. Rhodes, J.B. Kauffman, R.E. Gresswell, G.W. Minshall, J.R. Karr, D.A. Perry, F.R. Hauer, and C.A.Frissell, 2004. Postfire management on forested public lands of the western USA. Cons. Bio.,. http://pacificrivers.org/files/post-fire-management-and-sound-science/Beschta-etal2004.pdf and Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 in Wildlife-Habitat Relationships in Oregon and Washington (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001)

http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf

f. "Conservation of diverse young forests has received little attention in forest policy." USDA PNW Research Station. *Science Findings.* Sept 2003. http://www.fs.fed.us/pnw/sciencef/scifi56.pdf. "[T]here's a looming shortage of diverse young forests - where seedlings intermingle with fallen logs, standing dead snags, and shrubs - that provide specialized habitat for certain animals and plants. … there's a looming gap in diverse, young, early-successional conifer forest, the type of forest that once came in naturally after forest fires. These young forests, up to 10 years old, have a diversity of forest structures - fallen logs and dead snags - and a diversity of plant life. They are important habitat for the western bluebird and other birds that prefer open areas, as well as some shrub species. Today, because of intense timber management on private lands, young forests don't get the chance to develop much diversity." OSU. 2001. Press Release: Researchers Assess Forest Sustainability. http://web.archive.org/web/20060914032259/http://oregonstate.edu/dept/ncs/newsarch/2001/Oct01/assess.htm According to the CLAMS project: "Diverse young forests: also rare but receiving less attention. Legacy tree habitat: uncertain future.." Ohmann, Spies, Gregory, Johnson. 2002. Vegetation Biodiversity in the Oregon Coast Range. http://www.fsl.orst.edu/clams/download/presentations/j02s_ohmann_10june02.pdf (slide 24).

g. Hutto, R.L., 2006. Toward Meaningful Snag-Management Guidelines for Postfire Salvage Logging in North American Conifer Forests. Conservation Biology Volume 20, No. 4, 984–993. http://web.archive.org/web/20090310114517/http://avianscience.dbs.umt.edu/documents/hutto_conbio_2006.pdf ("Species such as the Black-backed Woodpecker (*Picoides arcticus*) are nearly restricted in their habitat distribution to severely burned forests. Moreover, existing postfire salvage-logging studies reveal that most postfire specialist species are completely absent from burned forests that have been (even partially) salvage logged. I call for the long-overdue development and use of more meaningful snag-retention guidelines for postfire specialists, and I note that the biology of the most fire-dependent bird species suggests that even a cursory attempt to meet their snag needs would preclude postfire salvage logging in those severely burned conifer forests wherein the maintenance of biological diversity is deemed important.")

h. A study of birds that use post-fire mosaics highlighted the importance of resprouting shrubs and forbs on the re-establishment of nesting birds following wildfire. "Of the 39 species for which nests were found, 14 (37%) used cavities and 25 (63%) built open-cup nests.... Species that built cup nests used snags,

residual live trees, resprouting hardwoods, and other ground vegetation and downed wood. The associations between the presence of breeding species and forb and shrub cover indicate that these are important components of the early establishment of bird populations following stand-replacing fires. These data suggest that post-fire management of resprouting hardwoods and herbaceous vegetation should consider potential impacts to bird species that nest and forage in burned forests." CFER 2007. Response of Birds to Fire Mosaics. CFER News. Winter 2007. http://www.fsl.orst.edu/cfer/pdfs/Vol7_1.pdf.

i. BLM admits that structurally complex young forests develop old forest characteristics twice as fast as structurally deprived initial conditions.

j. Mark E Swanson, Jerry F Franklin, Robert L Beschta, Charles M Crisafulli, Dominick A DellaSala, Richard L Hutto, David B Lindenmayer, and Frederick J Swanson 2010. The forgotten stage of forest succession: early-successional ecosystems on forest sites. Front Ecol Environ 2010; doi:10.1890/090157

k. Bats find favorable habitat in burned areas with abundant and diverse snags and abundant and diverse flying insects. Salvage logging will remove potential roost sites, and food sources. Carol Chambers and Erin Saunders. BATS IN THE BURNS - Studying the impact of wildfires and climate change. BATS. Bat Conservation International. Winter 2013, Volume 3, No. 4. http://www.batcon.org/index.php/media-and-info/bats-archives.html?task=viewArticle&magArticleID=1154

l. "Leaving a damaged forest intact means the original conditions recover more readily," says David Foster, … director of the NSF Harvard Forest LTER site. "Forests have been recovering from natural processes like windstorms, fire and ice for millions of years. What appears to us as devastation is actually, to a forest, a natural and important state of affairs." 10-16-2012 Press Release 12-198, In Blown-Down Forests, a Story of Survival to preserve forest health, the best management decision may be to do nothing. http://www.nsf.gov/news/news_summ.jsp?cntn_id=125744; Audrey Barker Plotkin, David Foster, Joel Carlson, and Alison Magill 2013. Survivors, not invaders, control forest development following simulated hurricane. Ecology, 94(2), 2013, pp. 414–423. http://harvardforest.fas.harvard.edu/sites/harvardforest.fas.harvard.edu/files/publications/pdfs/BarkerPlotkin_Ecology_2013.pdf

m. "Unmanaged early-seral stages of forest development are now considered to be among the most threatened habitat types in coniferous regions of the western United States (Noss et al. 2006, Thomas et al. 2006). Not surprisingly, concern has arisen over viability of populations that use broadleaf vegetation in early-seral forest, particularly as this habitat type contributes disproportionately to forest

biodiversity (Halpern and Spies 1997). In the northwestern United States, a number of bird species thought to be strongly associated with early-seral broadleaf habitat have declined and are considered conservation priorities (Altman 1999, U.S. Fish and Wildlife Service 2002). Because the PNW represents a substantial portion of the ranges of these species, loss of quality early-seral habitat could increase risk of extinction." M. G. Betts, J. C. Hagar, J. W. Rivers, J. D. Alexander, K. Mcgarigal, and B. C. Mccomb. 2010. Thresholds in forest bird occurrence as a function of the amount of early-seral broadleaf forest at landscape scales. Ecological Applications, 20(8), 2010, pp. 2116–2130. http://www.fsl.orst.edu/flel/pdfs/Betts%20et%20al%202010%20Ecol%20Apps.pdf

The EIS also fails to fully analyze and disclose the following issues concerning post-disturbance logging:

- Adverse impacts to soil, such as erosion, compaction, displacement, litter disturbance, nutrient depletion; loss of chemical buffering; loss of soil organic matter; loss of burrowing wildlife that help aerate soils; reduction of nitrogen fixing plants that boost soil fertility; loss of slope and snow stabilizing effects which could lead to mass wasting or eliminate mechanisms that may mitigate mass wasting;

- Loss of down wood functions s such as trapping sediment and aiding water infiltration, and creating microsites favorable for germination and establishment of diverse plants, and habitat for diverse wildlife;

- Loss of decaying wood and depletion of the "savings account for nutrients and organic matter" which affects site productivity through the removal of dead trees which store nutrients and slowly release them to the next stand. Marañón-Jiménez, S., Fernández-Ondoño, E., and J. Castro. 2013. Charred wood remaining after a wildfire as a reservoir of macro- and micronutrients in a Mediterranean pine forest. International Journal of Wildland Fire. http://dx.doi.org/10.1071/WF12030 ("Partially charred wood represented a considerable pool of nutrients, due to both the relatively high concentrations and to the great amount of biomass still present after the fire. Potential contributions of the charred wood were particularly relevant for N and micronutrients Na, Mn, Fe, Zn and Cu, as wood contained 2–9 times more nutrients than the soil. Post-fire woody debris constitutes therefore a valuable natural element as a potential source of nutrients, which would be lost from ecosystems in cases where it is removed")

- Recent studies indicate that wood may release nutrients more rapidly than previously thought through a variety of decay mechanisms mediated by means other than microbial decomposers, i.e., fungal sporocarps, mycorrhizae and roots, leaching, fragmentation, and insects;

- Loss of nutrients from live trees that are determined to be "dying." Live trees produce serve as refugia for animals, invertebrates, and mycorrhizae; produce litter fall; and help cycle nutrients which are all extremely valuable in the post-fire landscape;

- Loss of wood that serves to buffer soil chemistry and prevent extreme changes in soil chemistry;

- Water quality degradation;

- Loss of water storage capacity in down logs;

- Altered timing of storm run-off which could lead to peak flows that erode stream banks and scour fish eggs;

- Delaying the pace of vegetative recovery and reducing the quality/diversity of the vegetation community;

- Dead trees serve as a natural fence that protects young seedlings from browse by cattle and big game. This is one way that young aspen and other valuable species can get their start;

- Spread of invasive weeds through soil disturbance and extensive use of transportation systems;

- Loss of legacy structures that can carry species, functions, and processes over from one stand to the next;

- Loss of terrestrial and aquatic habitat (mostly snags and down logs) potentially harming at least 93 forest species (63 birds, 26 mammals, and 4 amphibians) that use snags for nesting, roosting, preening, foraging, perching, courtship, drumming, and hibernating, plus many more species that use down logs for foraging sites, hiding and thermal cover, denning, nesting, travel corridors, and vantage points for predator avoidance;

- Depletion of large wood structures in streams that can cause: 1) simplification of channel morphology, 2) increased bank erosion, 3) increased sediment export, 4) decreased nutrient retention, 5) loss of habitats associated with diversity in cover, hydrologic patterns, and sediment retention;

- Commercial salvage usually removes the largest snags, but this will disproportionately harm wildlife because: (1) larger snags persist longer and therefore provide their valuable ecosystem services longer and then serve longer as down wood too, and (2) most snag-using wildlife species are associated with

snags >14.2 inches diameter at breast height (dbh), and about a third of these species use snags >29.1 inches dbh.

- Truncation of symbiotic species relations and loss of biodiversity. Sixteen species are primary cavity excavators and 35 are secondary cavity users; 8 are primary burrow excavators and 11 are secondary burrow users; 5 are primary terrestrial runway excavators and 6 are secondary runway users. Nine snag-associated species create nesting or denning structures and 8 use created structures.

- Reduced avian and terrestrial species diversity, which affects plant and invertebrate diversity. Since different wildlife help disperse different sets of seeds and invertebrates, reduced wildlife diversity can significantly affect pace of recovery and the diversity of the regenerating stand. Snag- associated wildlife play a greater role in dispersal of invertebrates and plants, while down wood-associated wildlife play a greater role in dispersal of fungi and lichens. Down wood-associated species might contribute more to improving soil structure and aeration through digging, and to fragmenting wood, which increases surface area encouraging biological action that releases nutrients.

- Loss of partial shade that helps protect the next generation of forest;

- Loss of cover quality and fawning areas for big game;

- Loss of future disturbance processes such as falling snags that help thin and diversify the next generation of forest;[126]

- Increased human activity and human access that can increase fire risk;

- Increased fine fuels on the forest floor that can cause an increase in fire hazard;

- Loss of seed sources, and

- Loss of diversity of vegetation and microsite conditions.

- The fact that regional standards for snags and down wood fail to incorporate the most recent science indicating that more snags and down wood (especially large

[126] James A. Lutz And Charles B. Halpern. 2006. Tree Mortality During Early Forest Development: A Long-Term Study Of Rates, Causes, And Consequences. Ecological Monographs, 76(2), 2006, pp. 257–275. This study showed that mortality from mechanical damage ("crushing disturbance") from falling limbs and trees and snow loads can be a more significant factor than suppression mortality. *See also*, Brown, Martin J.; Kertis, Jane; Huff, Mark H. 2013. Natural tree regeneration and coarse woody debris dynamics after a forest fire in the western Cascade Range. Res. Pap. PNW-RP-592. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 50 p. "Snag fall and fragmentation added so much wood to the ground—thousands of meters of log length per hectare—that it probably constitutes a significant ecological disturbance in itself, a kind of rain of logs."

snags and logs) are required in order to maintain species viability and sustain site productivity.

- Arguments in support of the "reburn hypothesis" are specious. (1) partial reburn may be completely natural and desirable in some cases to consume some fuel and diversify the regenerating forest, and (2) salvage logging will cause a pulse of fine fuels on the ground and actually increase the reburn risk/hazard above natural levels, and (3) fuels that fall to the ground over time will to some extent decay as they fall.

- Uncertainty calls for a cautious approach.

Protecting large snags from salvage logging is particularly important. Because large snags last much longer than small snags, large snags are disproportionately valuable as wildlife habitat, nutrient and water reservoirs, soil stabilizers, etc. Jerry Franklin, in commenting on a large fire salvage project in 2015 said:

> Large snags and logs are the most important surviving structural elements or biological legacies of a forest disturbance (Franklin et al. 2002), excepting only surviving large live trees. Importance, in this case, refers to the roles of these structures in:
>
> (1) Providing essential habitat for an immense array of species;
>
> (2) Maintaining important ecosystem functions; and
>
> (3) Structurally enriching the young forest stand, making it possible for mid- and late successional species to re-colonize the stand much earlier in its chronological development than would otherwise be the case (Franklin et al. 1987).
>
> The importance of large snags and down wood for a broad array of species is recognized in the EIS document. These structures provide habitat for early as well as late successional species and sustain many important ecosystem processes (e.g., Harmon et al. 1986). However, the long persistence and multiple roles played by the large pulse of snags, logs, and other CWD provided by the stand-replacement event (Harmon et al. 1986; Maser et al. 1988) do not appear to be adequately recognized in the analysis of how much of this wood should be retained. For example, large Douglas-fir logs continue to fulfill important ecological functions, such as habitat for small mammals and salamanders, for 200 to 250 years after their death. Cedar snags can persist for at least as long as 1 ½ centuries and as logs for over twice that long.
>
> The massive input of large dead wood is characteristic and critical to stand development processes and the ultimate provision of habitat for late-successional species following stand replacement fires (Maser et al. , 1988; Franklin et al.

2002). As noted these wood structures may persist and play functional roles for several centuries, particularly in the case of decay resistant species. Large pines may also persist as snags for several decades and additional periods as logs on the forest floor. In fact, the entire recovering forest ecosystem will depend upon this pulse of CWD until it reaches a point in its development where the new stand begins to generate snags and logs of comparable size and heartwood content-generally between 100 and 200 years (Maser et al. 1988; Franklin et al., 2002). Consequently, basing snag and CWD retention following salvage on levels of these structures found in existing mature and old forests is not appropriate; *all of this initial pulse of wood is needed to reach those levels one to two centuries from now!* Indeed, the use of mature forests as a standard for CWD is particularly inappropriate since this is the period when CWD levels are at their lowest level during the entire natural developmental sequence from stand-replacement fire to old growth (see diagram in paper by Spies in Maser et al. 1988). It certainly does not appear to me that the approach taken in the DEIS reflects an appreciation of the fact that this one-time input of large and decay resistant CWO is all that the recovering forest ecosystem is going to get for the next 100 to 200 years.

The importance of snags, logs, and other CWD is recognized in FEMAT's (1993) scientific analysis. For example (my underlining for emphasis):

Because of the important role of dead wood in late-successional and old-growth forest ecosystems, and because there is much to learn about the role of dead wood in the development of forests, only limited salvage is appropriate in Late-Successional Reserves. .. The Final Draft Recovery Plan [for the NSO] would allow removal of small-diameter snags and logs, but would also require retention o[snags and logs likely to persist until the new stand begins to contribute significant quantities of coarse woody debris." FEMAT 1993, p. IV-37.

Snags provide a variety of habitat benefits for a variety of wildlife species associated with late-successional forests. Accordingly, following stand-replacing disturbances. management should focus on retaining snags that are likely to persist until late-successional conditions have developed and the new stand is again producing large snags. FEMAT 1993, p. III-37.

Following a stand replacing disturbance, management should retain adequate coarse woody debris quantities in the new stand so that in the.fi1ture it will contain amounts similar to natural regenerated stands. The analysis that determines the amount of coarsewoody debris to leave must account for the filii period of time before the new stand begins to contribute coarse woody debris .... FEMA T 1993, p. III-37.

Jerry Franklin. Comments on the Klamath NF, Westside Fires Salvage DEIS. 6 April 2015.

Retaining large snags is necessary to mitigate the "snag gap" caused by stand replacing disturbance. It may seem counter-intuitive but fire results in a snag shortage, even in the harvest land base. One of the most significant and lasting effects of stand replacing disturbance such as fire, wind, or regeneration logging is to bring the process of snag recruitment to a virtual standstill for many decades. Even if snags are not removed by the disturbance, snags created by the disturbance will fall down over time and few if any snags are created. This results in a "snag gap" that has serious adverse consequences for habitat and many other ecological processes. The apparent abundance of large snags after a stand replacing disturbance masks a severe shortage of large snags down the road.

In Congressional testimony in July 2004, Jerry Franklin said:

> It is sometimes argued that following a stand-replacement fire in an old-growth forest that snags and logs are present in "excess" of the needs of the site, in terms of ecosystem recovery. In fact, the large pulse of dead wood created by the disturbance is the only significant input of woody debris that the site is going to get for the next 50 to 150 years—the ecosystem has to "live" off of this woody debris until the forest matures to the point where it has again produced the large trees that can become the source for new snags and logs (Maser et al. 1988).

Dr. Jerry F. Franklin, Professor of Ecosystem Studies, College of Forest Resources, University of Washington. July 15, 2004. Testimony For The Record On Oversight Hearing On "Restoring Forests After Catastrophic Events" By House Committee On Resources, Subcommittee On Forest And Forest Health.
http://www.signaloflove.org/clearcutting/reports/fire3/Franklin%20Jerry%20July%202004%20testimony.pdf.

Similarly, Johnson & Franklin's 2008 Forest Plan for the Klamath Tribes says of large fires:

> Such fires do generate a large pulse of dying, dead and down material. After a stand-replacement fire, that pulse of large wood is all of the large wood that the recovering ecosystem is going to get for the next century or more—i.e., until trees of large size are once again a part of the stand. Some of this dead wood legacy will persist and fulfill important functional roles in the recovering forest for many decades and, in the case of the largest and most decay resistant material, even for a century or more.
>
> 1. The agency must recognize the asymmetric nature of snag dynamics after all types of stand replacing disturbance. High rates of snag fall would be expected in the decades following disturbance, while low rates of snag recruitment would be expected in the decades following a disturbance. This unavoidably results in a serious deficit of snags at some point in the future.

2. In order for the RMP NEPA analysis to fully address the snag habitat issue it must look carefully at the snag gap from both ends.

a. The snag gap begins when too many of the current snags are gone. So the snag gap is exacerbated on the front end by salvage logging which removes too many large snags.

b. The snag gaps ends when the next stand grows to the point that it contains large trees and some of them die, so the snag gap is exacerbated on the back end if there is a significant delay in tree regeneration.

3. The agency has a tendency to focus on the back end of the snag gap which is allegedly mitigated by tree replanting, but this benefit is in the distant future and remains speculative. The BLM tends to ignore the effect of logging on the front end of the snag gap (which is concrete and unavoidable).

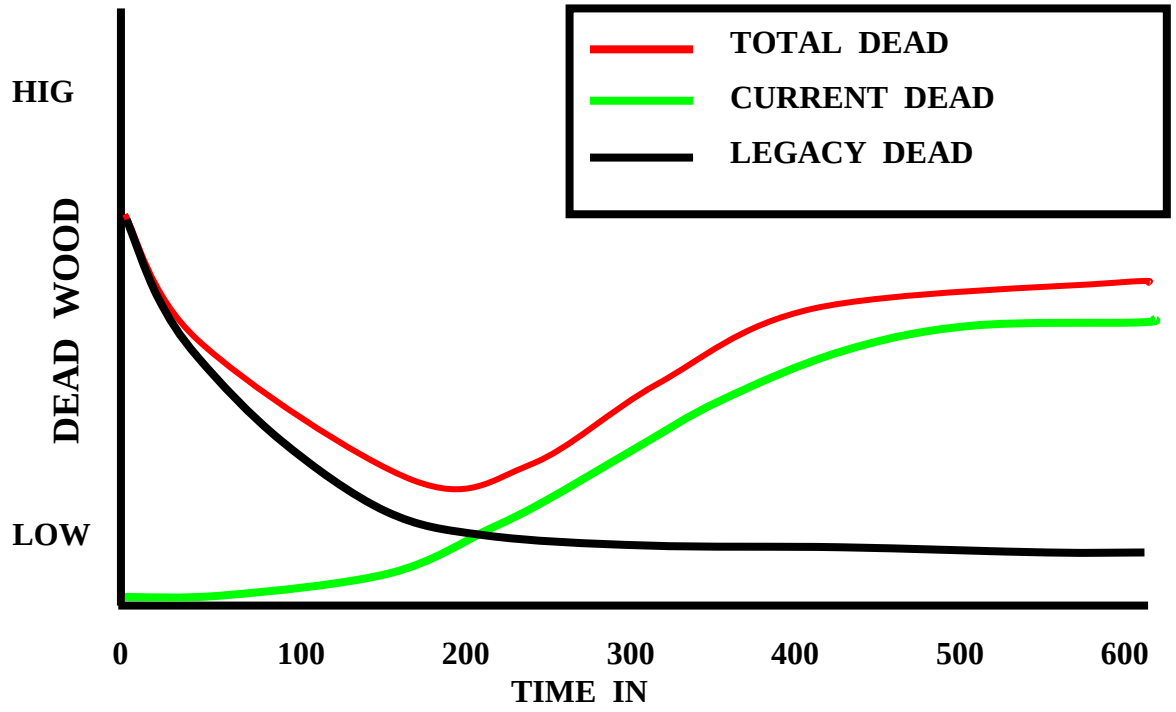
4. Logging which retains only enough snags to meet snag requirements after harvest will not meet snag requirements in a few years after those few retained snags fall.

5. The NEPA analysis must account for snag fall rates and figure out how to minimize the snag gap. Models that may be used to analyze snag dynamics can be found here: http://www.for.gov.bc.ca/hre/deadwood/DTmod.htm.

6. There is a strong correlation between the size of the snags and the length of time it is likely to remain standing, so salvage must be designed to retain all the large snag and only remove trees from smaller size classes.

7. Consider this example: Assume that the stands currently have 30 large trees/acre and 24 of those will be removed via salvage logging while 6 trees/acre will be retained for snag habitat. Further assume that in 50 years 2 percent of the large snags will remain standing as snag habitat. Two percent of 6 trees/acre is FAR LESS than 2 percent of 30 trees/acre, so there is a virtual statistical certainty that salvage logging will exacerbate the snag gap.

The snag gap is really exacerbated by salvage logging in two ways — first by targeting removal of the large and most persistent component of the snag population, and second by accelerating the rate that remaining snags fall and are lost from the snag population. New science from Idaho reveals that Ponderosa pine snags persist longer in unlogged areas. See Russell, R.E., Saab, V.A., Dudley, J.G., and J.J. Rotella. 2006. Snag longevity in relation to wildfire and postfire salvage logging. Forest Ecology and Management 232 (2006) 179-187. http://www.fs.fed.us/rm/pubs_other/rmrs_2006_russell_r001.pdf ("The predicted half-life of a ponderosa pine snag was 7-8 years in salvage logged plots and 9-10 years in unlogged plots.")


TOTAL DEAD
CURRENT DEAD
LEGACY DEAD
HIG
DEAD WOOD
LOW
0
100
200
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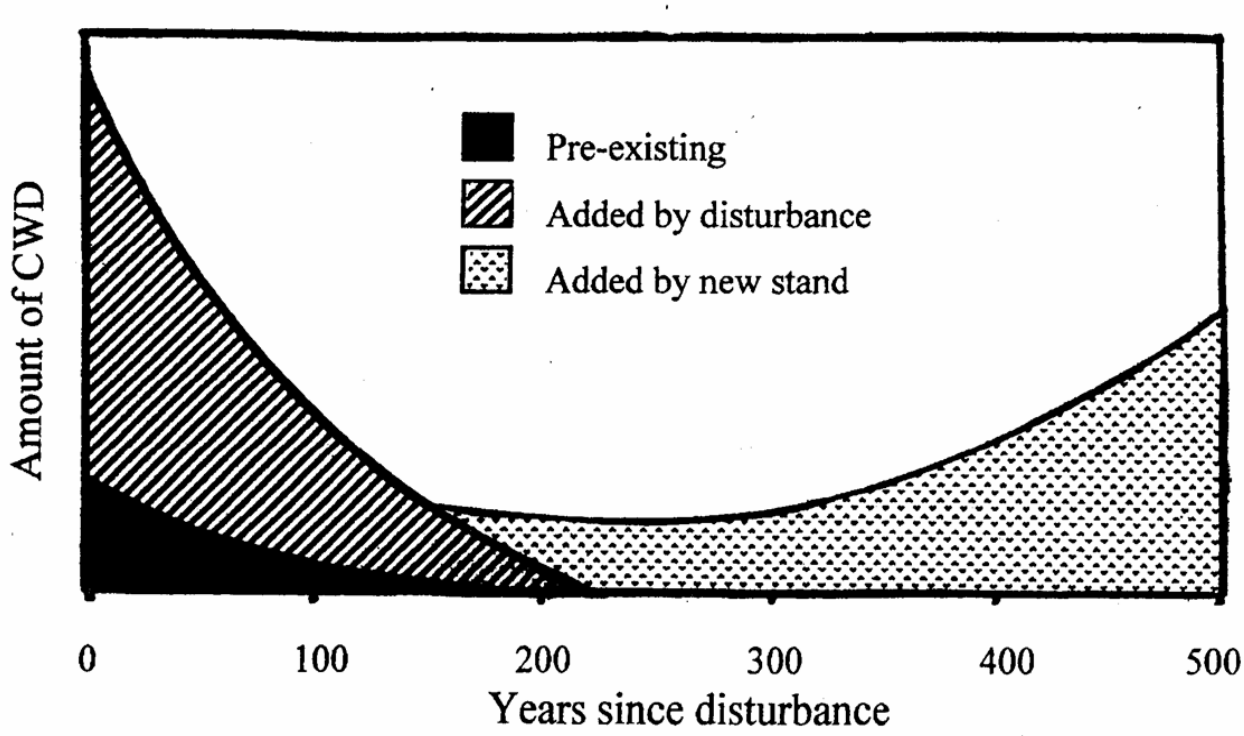
Pre-existing
Added by disturbance
Added by new stand
Amount of CWD
0
100
200
300
400
500
Years since disturbance

The BLM often compares their proposed snag retention levels to the *average* number of snags across the landscape, without recognizing that after a significant disturbance such as fire "the rate of input [of snags] to the CWD pool is 100-1000x the rate expected for an unburned steady-state forest (Harmon et al 1986). Even afterwards, in the next 5 or 6 years, the rate of input is still 5 or 10 or even 100 times that steady-state rate." http://web.archive.org/web/20050428020846/http://www.brownandbrown.tv/warner-presentation-2002-05-14b.pdf

The shortage of snags in the decades following stand-replacing fire is acknowledged by the Forest Service on page 136 of the Wallowa-Whitman National Forest's Trail Vegetation Management Project EA (October 2012). http://www.fs.usda.gov/project/?project=34482

The BLM has previously admitted that a "high proportion" of snags "are expected to persist for at least 50 years." Roseburg BLM 2009, Little Wolf 3 Density Mgt EA. http://www.blm.gov/or/districts/roseburg/plans/files/LittleWolf3EA.pdf. This means that salvage logging can exacerbate the snag gap at the front end by at least 50 years.

An example of how salvage would lengthen the period that a forest remains inhospitable to wildlife is provided by the following study, Payer, D.C., and D.J. Harrison. 2000. Structural differences between forests regenerating following spruce budworm defoliation and clear-cut harvesting: Implications for marten. Canadian Journal of Forest Research 30(12): 196572. ("Summary: The authors looked at the use of clearcuts and areas where spruce budworm has caused mortality in relation to the American marten. When establishing new territories, martens avoid clearcuts but do not avoid stands with a history of extensive tree mortality caused by eastern spruce budworm. Although live tree basal area was similar between stand types, the results showed that the vertical structure provided by large snags can offset the limited availability of live trees for the marten, particularly where coarse woody debris and understory vegetation are plentiful.") http://www.umaine.edu/cfru/documents/payer.pdf

The scope, severity and significance of the impacts discussed above were not adequately analyzed and disclosed in the FEIS/PRMP.

Salvage logging should be avoided and minimized because it will violate the O&C Act mandate to protect watersheds and favorable conditions of water flow. Salvage retards watershed and aquatic recovery.

> In short, by adding another stressor to burned watersheds, postfire salvage logging worsens degraded aquatic conditions accumulated from a century of human activity (CWWR 1996,NRC 1996, 2002,McIntosh et al. 2000). The additional damage impedes the recovery and restoration of aquatic systems, lowers water quality, shrinks the distribution and abundance of native aquatic species, and compromises the flow of economic benefits to human communities that depend on aquatic resources (Beschta et al. 2004).

Karr, J. R., J. J. Rhodes, G. W. Minshall, F. R. Hauer, R. L. Beschta, C. A. Frissell, and D. A. Perry. 2004. The effects of postfire salvage logging on aquatic ecosystems in the American West. BioScience 54:1029-1033. http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Salvage-Karr04.pdf *citing* Beschta, ,R.L., J. J. Rhodes, J. B. Kauffman, R. E. Gresswell, G. W. Minshall, J. R. Karr, D.A. Perry, F.R. Hauer, C. A. Frissell. 2004. Postfire Management on Forested Public Lands of the Western United States. Conservation Biology 18: 957–967. Downloadable at: https://www.researchgate.net/publication/227654964_Postfire_Management_on_Forested_Public_Lands_of_the_Western_United_States?ev=prf_pub

The quantity, quality, and rate of revegetation has a direct contribution to controlling erosion and sedimentation. USGS has described the role of vegetation in slope stability and erosion as follows:

> In a watershed, vegetation provides five major physical functions that help control soil erosion during rainfall events (Spittler, in press):
>
> - Interception of rainfall, which extends the time for water to reach the ground surface and absorbs raindrop impact energy.
> - Mulching of the ground surface to provide temporary water storage and slow release, slope roughness, and energy absorption.
> - Structural support of loose, surficial material.
> - Reinforcement of the deeper soil by roots, which increases the natural slope stability.
> - Maintains conditions necessary for soil micro-organisms that provide soil structure.

http://web.archive.org/web/20040218052053/http://landslides.usgs.gov/html_files/ofr95-508/skrep2.html *citing* Spittler, T.E., in press, Fire and the debris-flow potential of winter storms, in, Proceedings of the Symposium on Brush Fires in California Wildlands: Ecology and Resource Management: International Association of Wildland Fire.

Wagenbrenner et al (2015) found that –

- Post-fire salvage logging increased soil compaction and decreased vegetative cover.
- Salvage logging greatly increased sediment production from more disturbed plots. ("Sediment production from the skidder plots was 10–100 times the value from the controls.")

- Salvage logging delayed post-fire recovery of vegetation and sediment production. ("The relative differences in sediment production between the disturbed plots and the controls tended to increase over time as the controls exhibited more rapid regrowth." Data were taken 2-8 years post-harvest.)

Joseph W. Wagenbrenner, Lee H. MacDonald, Robert N. Coats, Peter R. Robichaud, Robert E. Brown. 2015. Effects of post-fire salvage logging and a skid trail treatment on ground cover, soils, and sediment production in the interior western United States. Forest Ecology and Management. Volume 335, 1 January 2015, Pages 176–193.
http://www.nrel.colostate.edu/assets/nrel_files/labs/macdonald-lab/pubs/Salvage-logging-Wagenbrenner%20et%20al-ForEcolMgmt-2015.pdf

Salvage logging will set back vegetative recovery that has already started and thereby retard attainment of riparian and aquatic management objectives. In research on post-fire logging on the Winema NF, Sexton (1998) found that salvage logged sites produced only about 38% of the understory biomass of that on the unlogged site; and one year later produced only about 27% of the understory biomass of that on the unlogged site. In fact, Sexton's (1998) study comparing salvaged and unsalvaged areas of a fire on the Winema NF one and two years after logging showed:

Salvage Areas	**Unsalvaged Areas**
reduced vegetation biomass	greater vegetation biomass
reduced species diversity	greater species diversity
reduced species richness	greater species richness
reduced growth of planted seedlings	greater growth of planted seedlings
reduced survival of planted seedlings	greater survival of planted seedlings

Sexton, Timothy O. 1998. Ecological effects of post wildfire activities (salvage-logging and grass-seeding) on vegetation composition, diversity, biomass, and growth and survival of *Pinus ponderosa* and *Purshia tridentata*. MS Thesis Oregon State University. Corvallis, OR. 121p

Similarly, Dan Donato, looked at the effects of salvage logging at the Biscuit fire in SW Oregon and found that cutting down dead trees and hauling away logs killed 71 percent of the naturally established seedlings which were abundant after the fire but scarce after logging. D. C. Donato, J. B. Fontaine, J. L. Campbell, W. D. Robinson, J. B. Kauffman, B. E. Law. Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk. www.sciencexpress.org. 5 January 2006.

Shatford and Hibbs recently found similarly encouraging results of natural regeneration.

> Over the 2005 field season, natural regenerating conifers were sampled in 38 plots within 11 historic fires in the Klamath-Siskiyou Region … Years since stand replacing wildfire ranged from [18 years to 9 years] … The density of natural regenerating conifers ranged over three orders of magnitude … Although the

> abundance of natural regeneration was frequently high, the age and size of saplings ranged considerably … Frequently, the regenerating saplings were overtopped by shrubs and hardwoods. There was no evidence of recent conifer mortality (i.e., no dead or dying saplings) caused by competition … Saplings were generally in good condition with dominant trees having live crown ratios of 50% or greater.

Shatford, J., Hibbs, D.E. 2005. Predicting Post-fire Regeneration Needs: Spatial and Temporal Variation in Natural Regneration in Southwestern Oregonadn Northern California. Pp 29-32 *in* Cooperative Forest Ecosystem Research Program (CFER) 2005 Annual Report. http://www.fsl.orst.edu/cfer/pdfs/CFER_ar05.pdf. This data reveals that natural regeneration is not only demonstrably successful but also species diverse and variable both spatially and temporally. All of these attributes are highly beneficial in terms of both wildlife habitat and fuel hazard.

The adverse effects of salvage logging on vegetative recovery described by Sexton are not unique to the Ponderosa pine forest type. The results are in fact quite consistent with the results found by Michael Grifantini et al after salvage logging in Douglas fir forests in northwestern California. Grifantini, M.C., Stuart J.D., and L. Fox III, 1992. "Deer Habitat Changes Following Wildfire, Salvage, Logging and Reforestation, Klamath Mountains, California," Proceedings of the Symposium on Biodiversity of Northwestern California, Oct 28-30, 1991, Santa Rosa, CA. UC Wildland Resource Center Report 29. December 1992.

The adverse effects described by Sexton appear to be long lasting. Busse at al 1996 found that the annual growth rate of pines was reduced by almost 20% where understory vegetation had been removed thirty years earlier. In addition, research has shown a direct relationship between the level of on-site coarse woody debris and the amount active ectomycorrhizal root tips. Graham, R. T., Harvey, A. E., Jurgensen, M., F., Jain T. B., Tonn, J. R., and Page-Dumroese, D. S. 1994. Managing coarse woody debris in forests of the Rocky Mountains. Res. Pap. INT-RP-477. Ogden, UT: U. S. Department of Agriculture, Forest Service, Intermountain Research Station, 13 p. See also Russell T. Graham, Theresa Benevidez Jain, and Alan E. Harvey FUEL: LOGS, STICKS, NEEDLES, DUFF, AND MUCH MORE. The Joint Fire Science Conference and Workshop
http://web.archive.org/web/20060829024013/http://jfsp.nifc.gov/conferenceproc/T-10Grahametal.pdf

Undisturbed litterfall after wildfire reduces soil erosion caused by both rain and overland-flow. By disturbing needle cover and effectively reducing the soil coverage, logging and yarding will cause increased in erosion compared to not logging. Pannkuk, C. D., and P. R. Robichaud. 2003. Effectiveness of needle cast at reducing erosion after forest fires, *Water Resources Research*, Vol. 39, No. 11, doi:10.1029/2003WR002318, 2003. http://www.agu.org/pubs/crossref/2003/2003WR002318.shtml They found that a 50 percent ground cover of Douglas fir needles reduced water flow erosion by 20 percent and rain-induced

erosion by 80 percent. A 50 percent ground cover of ponderosa pine needles reduced water flow erosion by 40 percent and rain-induced erosion by 60 percent.

The Revised Recovery Plan for the northern spotted owl recommends retention and restoration of structure function and process across the dry forest landscape. This includes legacy retention after fires. The 2011 Final Revised Recovery Plan for the Northern Spotted Owl says:

> In general, we recommend that dynamic, disturbance-prone forests of the eastern Cascades, California Cascades and Klamath Provinces should be actively managed in a way that reconciles the overlapping goals of spotted owl conservation, responding to climate change and restoring dry forest ecological structure, composition and processes, including wildfire and other disturbances (Noss et al. 2006, Spies et al. 2006, 2010a, Agee and Skinner 2005, Healey et al. 2008, Mitchell et al. 2009). …
>
> …[O]ur intent in this Revised Recovery Plan is to embed spotted owl conservation and recovery within broader dry forest ecosystem restoration efforts to increase the likelihood spotted owl habitat will remain on the landscape longer and develop as part of this fire adapted community … To accommodate future disturbances and restore ecosystem resiliency, we believe it is essential to restore ecosystem structure, composition and processes. Restoring ecosystem structures that provide resiliency will necessitate maintaining and restoring the biological legacies that typically persist through disturbance events and influence the recovery process in the post-disturbance landscape (Franklin et al. 2000). With respect to the dry forest landscapes, structural legacies include not only the large trees that tend to be fire tolerant, but the snags and downed wood that were created as a result of the disturbance event. Structural legacies serve valuable functions such as reproductive structures that facilitate plant propagation, modifying microclimates, or improving connectivity through the disturbed area (Franklin et al. 2007). … These principles should be part of any dry forest restoration treatment: … Retain and restore heterogeneity within stands (i.e., manage for fine-scale mosaic within stands). This includes both vertical and horizontal diversity. …
>
> … [P]ost-fire timber harvest activities "undermine many of the ecosystem benefits of major disturbances" (Lindenmayer et al. 2004:1303) and frequently "ignore important ecological lessons, especially the role of disturbances in diversifying and rejuvenating landscapes" (DellaSala et al. 2006:51). … studies of spotted owls in post-fire landscapes indicate that spotted owls use forest stands that have been burned, but generally do not use stands that have been burned and logged. Consistent with restoration goals, post-fire management in these areas should promote the development of habitat elements that support spotted owls and their prey, especially those which require the most time to develop or recover (e.g., large trees, snags, downed wood). Such management should include

> retention of large trees and defective trees, rehabilitation of roads and firelines, and planting of native species (Beschta et al. 2004, Hutto 2006, Peterson et al. 2009). We anticipate many cases where the best approach to retain these features involves few or no management activities. … Many researchers supported the need to maintain habitat for spotted owl prey. For example, Lemkuhl et al. (2006) confirmed the importance of maintaining snags, downed wood, canopy cover, and mistletoe to support populations of spotted owl prey species. Gomez et al. (2005) noted the importance of fungal sporocarps which were positively associated with large downed wood retained on site post-harvest. Carey et al. (1991) and Carey(1995) noted the importance of at least 10 to 15 percent cover of downed wood to benefit prey. The costs and benefits of post-fire harvest to the development of habitat for spotted owls and their prey should be evaluated by interagency teams (e.g., Level 1 teams) during the consultation process.
>
> Recovery Action 12: In lands where management is focused on development of spotted owl habitat, post-fire silvicultural activities should concentrate on conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood). Examples of areas where we believe this recovery action would greatly benefit future spotted owl habitat development include such fire-affected areas as the Biscuit fire, the Davis fire and the B&B complex.

USFWS 2011. Final Revised Recovery Plan for the Northern Spotted Owl. pp III-20, III-32 – III-34, III-48 – III-49. Note also, the 1994 Northwest Forest Plan ROD (page C-11, and 1994 FSEIS page F-146) says that " ... activities required by recovery plans for listed threatened and endangered species take precedence over Late-Successional Reserve standards and guidelines."

Also, keep in mind the FWS' June 28, 2011 Response-to-Comments on the Revised Recovery Plan says "Whether a burned area could support nesting spotted owls is not relevant to our recommending focusing on spotted owl habitat restoration and conservation of legacy habitat elements in areas where pre-fire management focused on developing spotted owl habitat. This recovery action is designed to provide for legacy habitat elements remaining after high-intensity fires which will contribute to future habitat development." http://web.archive.org/web/20130315193800/http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/Recovery/Library/Documents/Comments.Responses.pdf And, keep in mind "where pre-fire management focused on developing spotted owl habitat" includes all dry forests, e.g., "[O]ur intent in this Revised Recovery Plan is to embed spotted owl conservation and recovery within broader dry forest ecosystem restoration efforts."

The 2008 FRP (p 116) also says "Large and old trees, either living or dead, are important wherever they occur." The FWS response-to-comments on the draft recovery plan says "post-fire harvest recommendations stress the need to conserve large trees, both living and dead, as they are important components to the restoration of owl habitat after wildfire events." And recommends that after fire or other disturbance the agencies should "conserve the remaining

large trees and snags."
http://www.fws.gov/pacific/ecoservices/endangered/recovery/pdf/NSO_RPApp_F_Response_to_Comments_5_7_08.pdf. Since large snags take a very long time to grow and recruit, salvage logging should retain all large snags. Any salvage logging proposal must also carefully disclose and balance all detrimental effects and alleged beneficial effects of salvage logging and connected actions like road building.

Clark (2007) looked at post-fire habitat selection by spotted owls after several wildfires in southern Oregon and determined that low severity fire in nesting, roosting, foraging habitat appears to benefit spotted owl occupancy and colonization.

> Initial occupancy was positively influenced by the amount of roosting and foraging habitat with low severity burn within the core (β = 0.08, 95% C.I. = -0.02 – 0.17) … Colonization rates were positively influenced by the amount of nesting, roosting and foraging habitat that received a low severity burn within the core (β = 0.08, 95% C.I. = 0.02 – 0.15).

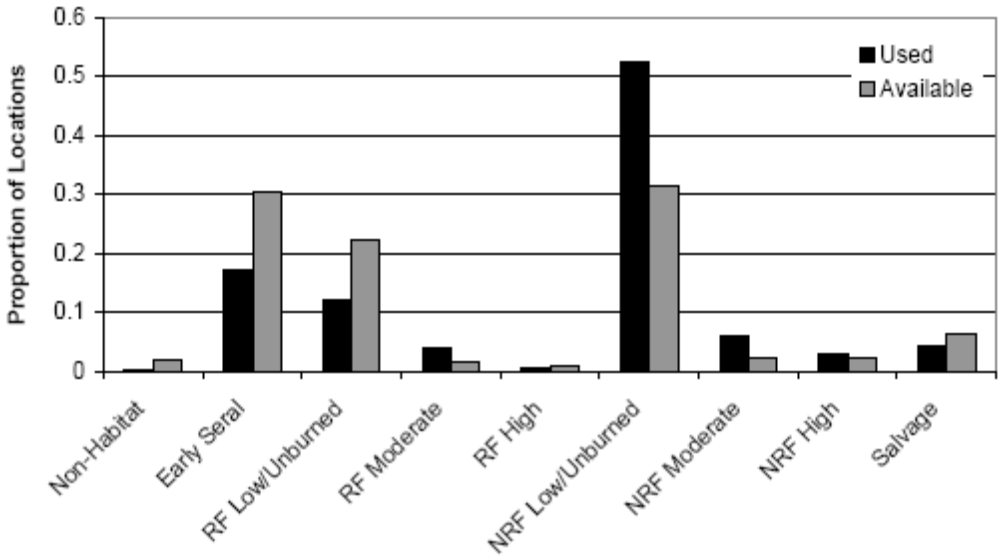

Figure 6.1. Proportions of used and available habitats for northern spotted owls monitored at the Timbered Rock Fire and surrounding areas from September, 2004 to August, 2006.

Darren A. Clark. 2007. Demography and Habitat Selection of Northern Spotted Owls in Post-Fire Landscapes of Southwestern Oregon. M.S. Thesis. Oregon State University. Robert Anthony, Advisor. Figure 6.1 shows that nesting, roosting, foraging habitat is used more frequently than random sites even after it has experienced moderate or high severity fire, while areas that were salvage logged were used less frequently than random sites.

See also, Clark, Anthony & Andrews 2013. Relationship Between Wildfire, Salvage Logging, and Occupancy of Nesting Territories by Northern Spotted Owls. The Journal of Wildlife Management 77(4):672–688; 2013; DOI: 10.1002/jwmg.523 ("Timbered Rock had a 64% reduction in site occupancy following wildfire (2003–2006) in contrast to a 25% reduction in site occupancy at South Cascades during the same time period. This suggested that the combined effects of habitat disturbances due to wildfire and subsequent salvage logging on private lands negatively affected site occupancy by spotted owls. In our second analysis, we investigated the relationship between wildfire, salvage logging, and occupancy of spotted owl territories at the Biscuit, Quartz, and Timbered Rock burns from 2003 to 2006. Extinction probabilities increased as the combined area of early seral forests, high severity burn, and salvage logging increased within the core nesting areas.").

BLM fails to acknowledge or discuss the issues raised by the above studies and others or explain why, in light of this evidence, it should not avoid salvage logging and replanting because it increases fire hazard by moving small hazardous fuels from the canopy to the ground where they are more available for combustion and replanting creates a dense continuous fuel profile that is conducive to fire severity and fire spread which will directly inhibit the purpose of the Resource Management Plan to "restore fire-adapted ecosystems."

The FEIS fails to fully disclose and analyzes other information which shows that salvage logging will increase fire hazard via post-disturbance logging in the harvest land base:

> "The slash created by the harvest and fuels treatments that is left on the ground for site protection and future site productivity, would create a short term (zero-eight years) fire hazard. The fuel-bed created by these treatments would be, in large part, comprised of material in the smaller size classes. These fuels would contribute to the flammability and continuity of fuels on a local level, as well as across the landscape. Under good burning conditions, fires burning in these slash fuel types have the potential to spread rapidly and extensively."

Bitterroot NF Burned Area Recovery DEIS, p. 3-12.

> "There's no science that demonstrates re-burn potential in areas where there is downed wood or decayed wood."

Craig Bobzien, Bitterroot NF Acting Supervisor (Missoula Independent, July 19, 2001)

> "We found no studies documenting a reduction in fire intensity in a stand that had previously burned and then been logged."

Environmental Effects of Postfire Logging (USDA Forest Service, 2000)

> "[We] are aware of no evidence supporting the contention that leaving large dead wood material significantly increases the probability of reburn."

Wildfire and Salvage Logging (Beschta, et al., Oregon State University, 1995)

> "The removal of large, merchantable trees from forests does not reduce fire risk and may, in fact, increase such risk."

Dept. of Agriculture and Interior, Report to the President (September 2000)

The best available science indicates that salvage logging increases small fuels that are most hazardous, and reduces large wood which is most valuable to wildlife.

> Our study examined fuel succession patterns by surveying downed woody fuels across a chronosequence of dry coniferous forest stands that burned with high fire severity (95–100% overstory tree mortality) within mixed- and high-severity wildfires in eastern Washington and Oregon, USA, between 1970 and 2007. We sampled forests in which ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) are the dominant early-seral tree species … Relative to unlogged stands, post-fire logging initially increased surface woody fuel loads, increasing small diameter fuel loads by up to 2.1 Mg/ha during the first 5 years after fire and increasing medium diameter fuel loads by up to 5.8 Mg/ha during the first 7 years after fire. Logging subsequently reduced surface woody fuel loads, reducing large diameter fuel loads by up to 53 Mg/ha between 6 and 39 years after wildfire … The initial pulse of elevated surface fuels in logged stands was expected under our first hypothesis. Post-fire logging transfers woody debris in tree branches and tops from the canopies of fire-killed trees to the forest floor, producing well-documented conditions of higher surface woody fuels in logged stands than in unlogged stands in the first 1–4 years following logging (Donato et al., 2006, 2013; McIver and Ottmar, 2007; Monsanto and Agee, 2008; Keyser et al., 2009). Higher amounts of surface woody fuels – especially small and medium diameter woody fuels – can increase short-term fire hazards in logged stands by increasing potential rate of spread and fire-line intensity … Post-fire logging was most effective for reducing large diameter surface fuels, consistent with our second hypothesis. By removing tree boles, post-fire logging reduced maximum large diameter fuel loadings and produced a long period of reduced large diameter fuels, including both sound and rotten fuels. Although large diameter fuels may contribute little to fire spread rates (Hyde et al., 2011) and are typically disregarded in fire behavior modeling ….

David W. Peterson, Erich K. Dodson, Richy J. Harrod 2015. Post-fire logging reduces surface woody fuels up to four decades following wildfire. Forest Ecology and Management 338 (2015) 84–91. http://www.firescience.gov/projects/06-3-4-16/project/06-3-4-16_Peterson_et_al_-_2015_-_FEM_-_post-fire_logging_and_fuels.pdf. This study showed that salvage logging is most effective at reducing large fuels, which contribute least to fire hazard, but the study strangely failed to consider the effect on habitat. Reducing large wood for 40 years or more will have a significant adverse effect on wildlife habitat. It is also notable that this study focuses on

fuels, but failed to note whether any of the numerous fire areas they looked at across Oregon and Washington had actually reburned. Studies that have looked at this issue, show that the risk of reburn (with or without salvage logging) is small, while the risk to wildlife from salvage logging is great.

Similar results were found in a "NecroDynamics" model that looked at 7 fires in the eastern slopes of the Oregon Cascades.

> Salvage logging immediately increased surface fine woody fuel loadings by 160–237% above maximum loadings observed in unmanipulated stands, and were higher during the initial 18–22 years post-fire … [O]ur modeling results suggest salvage logging has mixed effects on reducing hazardous fuel conditions since it increases fine woody fuel loadings and decreases coarse woody fuel loadings. … [P]rescriptions can be altered. For example, [to] retain a higher abundance of snags which would reduce the magnitude of difference in fine woody fuels between salvaged and unmanipulated stands during early in post-fire succession …. Although salvage logging reduces coarse woody fuel loadings, alone it does not mitigate re-burn hazard because it increases fine woody fuel loadings …. Additionally, intensive reforestation typically substitutes conifer biomass for shrub biomass, limiting hazardous fuels reduction unless additional efforts are employed … Understory woody vegetation reestablishes rapidly in these dry-mixed conifer forests (Dunn and Bailey, in press) and can be a highly-flammable fuel layer (Weatherspoon and Skinner, 1995), as well as a source of post-fire fine woody fuels when shrub crowns die (Table 4). This suggests salvage logging alone will not mitigate contributions to re-burn hazard from dead biological legacies when the temporal dynamics of multiple fuelbeds (e.g., fine woody fuels, coarse woody fuels, and regenerating vegetation) are evaluated. R … Salvage logging to enhance ecosystem resilience may not be appropriate if multiple ecosystem functions and resources are considered, including; coarse wood use by wildlife (Cahall and Hayes, 2009; Hutto, 1995; Fontaine et al., 2009; Saab et al., 2005), functional attributes of early seral vegetation (Swanson et al., 2010), compounding effects on soil and nutrient pools (Brais et al., 2000; Triska and Cromack, 1980) and reduced water and carbon storage (Harmon et al., 1986).

Christopher J. Dunn, John D. Bailey 2015. Modeling the direct effects of salvage logging on long-term temporal fuel dynamics in dry-mixed conifer forests. Forest Ecology and Management 341 (2015) 93–109. http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Dunn&Bailey2015.pdf The authors suggested modifying salvage logging prescriptions to retain more snags, which would help retain fine fuels in the canopy longer and reduce the amount of fine fuels that are moved from the canopy to the ground.

A study of the portions of the Biscuit fire that were previously burned by wildfire, reveals that salvage logging did not reduce the severity of subsequent fires, and in fact salvage logging

appeared to increase the severity of subsequent wildfires. *See* Jonathan R. Thompson, Thomas A. Spies, and Lisa M. Ganio. 2007. Reburn severity in managed and unmanaged vegetation in a large wildfire. Proceedings of the National Academy of Sciences. *PNAS* published online Jun 11, 2007. http://www.fs.fed.us/pnw/pubs/journals/pnw_2007_thompson001.pdf ("In places that burned with high severity in the Silver Fire, areas that were salvage-logged and planted burned with even higher severity than comparable unmanaged areas.") http://www.fs.fed.us/pnw/research/PNAS_Biscuit_Author_Comments_PNW.doc. This represents significant new information about salvage logging. ("Some, including forest scientists, would have expected fire severity to be lower in the logged and planted sites, where large wood was removed, broadcast burning done to reduce fine surface fuels, and some vegetation management conducted possibly reducing the cover of flammable shrubs. That our findings were the opposite of this expectation indicates that the large diameter wood is not a major factor in flammability …").

A peer-reviewed scientific study scientific study of post-fire logging (McIver and Ottmar 2007) showed that salvage logging causes a four-fold increase in fine fuels and that increase can last for 15 years. Fine fuels tend to cause wildfires to rapidly spread which is more likely to kill young trees and set back forest recovery. Unlogged fire areas (the controls) had lower levels of fine fuels but had higher levels of large fuels. Large fuels do not tend to exacerbate the spread of fire but they can heat the soil. However, soil heating is a patchy phenomena that forests have evolved with and can tolerate. Retaining the large wood is also important for wildlife habitat and soil conservation. The scientific consensus in the fuel management literature is that it is more important to control small fuels. J.D. McIver, and R. Ottmar. 2007. Fuel mass and stand structure after post-fire logging of a severely burned ponderosa pine forest in northeastern Oregon. Forest Ecology and Management. Volume 238, Issues 1-3 , 30 January 2007, Pages 268-279.
http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Salvage-McIver07.pdf

Donato looked at the effects of salvage logging after the Biscuit fire and found that:

> Postfire logging significantly increased both fine and coarse downed woody fuel loads (Fig. 1B). This pulse was comprised of unmerchantable material (e.g., branches), and far exceeded expectations for postfire logging-generated fuel loads (5, 6). In terms of short-term fire risk, a reburn in logged stands would likely exhibit elevated rates of fire spread, fireline intensity and soil heating impacts (7). Postfire logging alone was notably incongruent with fuel reduction goals. Fuel reduction treatments (prescribed burning or mechanical removal) are frequently intended following postfire logging, including in the Biscuit plan, but resources are often not allocated to complete them (8). Our study underscores that, after logging, mitigation of short-term fire risk is not possible without subsequent fuel reduction treatments.

D. C. Donato, J. B. Fontaine, J. L. Campbell, W. D. Robinson, J. B. Kauffman, B. E. Law. Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk. www.sciencexpress.org. 5 January 2006.

The 1987 Bland Mountain fire burned east of Canyonville and was heavily salvage logged. The same area then reburned in 2004 with high fire intensity. Salvage logging did not appear to save these plantations from intense fire, in fact, the removal of large logs and dense replanting may have made the fire more intense. One fact is unquestionable, that is that fire hazard is high in young plantations even when they are salvaged.

Salvage logging as proposed in the FEIS/PRMP does nothing to address the above evidence and may in fact lead to increased density of conifer vegetation types that are more flammable than the mixed conifer-broadleaf vegetation types that may be less flammable.

The FEIS acknowledges that the timber industry is inherently volatile and timber production causes community instability. The proposed unquantified and unanalyzed salvage logging program within the harvest land base will amplify these adverse effects by creating unpredictable temporary pulses in log supply.

The PRMP/FEIS projects that salvage logging would occur at the rate of 359 acres per year. This is misleading because fires do not occur in a steady rate over time. They are highly episodic, with some years producing few wildfires and other years producing many thousands of acres of wildfires. Salvage logging would likely follow this episodic, boom-bust pattern. The FEIS did not analyze or disclose this disruptive effect on community stability.

The minimal post-disturbance salvage logging retention guidelines for forest stands in the Harvest Land Base appear to allow for and encourage logging of green trees that survived the disturbance event. The FEIS makes no attempt to quantify, analyze or disclose the impacts of green tree logging in post-disturbance stands. Surviving trees contribute to soil stabilization, provide a seed source, wildlife habitat and watershed benefits in post-disturbance forest stands. The FEIS provides no parameters or guidance regarding the removal of such trees and fails to analyze or disclose the impacts of post-disturbance green tree logging.

In sum, the FEIS/PRMP's consideration of the effects of post-fire salvage logging is incomplete and inaccurate and the BLM's proposed RMP based on this inadequate analysis is arbitrary and contrary to law.

XV. REGENERATION HARVEST

BLM failed to respond to comments showing that regeneration harvest is not needed and would have undisclosed adverse environmental impacts. There is already too much early seral forest in the checkerboard landscape and climate change is expected to create more. BLM seems to think that managing for sustained yield somehow requires BLM to conduct regeneration harvest on some significant portion of the landscape. As described elsewhere in this protest, that

is incorrect as a matter of law and is not supported by the evidence. BLM can produce wood sustainably as part of its management activities aimed at meeting its legal duties under the O&C Act, FLMPA, Endangered Species Act, Clean Air Act, and Clean Water Act, e.g., community stability, permanent forest, watershed protection, regulate water flow, recreation, recovery of listed species, preventing the need to list more species, etc.

Public comments pointed out a variety of ways that regeneration harvest would undermine BLM's legal duties:

- regen logging feeds a volatile industry that destabilizes communities;
- regen logging exacerbates global climate change and ocean acidification which undermine community stability, species recovery, and many other policy objectives;
- regen logging increases fire hazard;
- regen logging does not mimic natural processes so it creates novel forest patterns (e.g., small patch scale) and structures (e.g., shortage of dead wood legacies) that conflict with wildlife conservation;
- regen logging creates degrades scenic values, recreation, and quality of life that need to be conserved as important economic development assets.

In the face of this evidence and the applicable legal standards, BLM has not explained why the FEIS/PRMP persists in calling for regeneration harvest on substantial portions of BLM lands.

XVI. FOREST MANAGEMENT

The PRMP protects trees that are large *and* old in certain land allocations. RTC 178, FEIS/PRMP at 1918. BLM does not explain why it refused to extend this protection to all old trees regardless of size. Small old trees are ecologically valuable and resilient. They have put more resources into defensive compounds rather than growth and they should be retained. BLM did not take a hard look at the ecological consequences of losing these unique traits in the ecosystem. BLM should identify and retain all trees with old-growth characteristics even if they are not "large." Old growth characteristics include thick bark, colored bark, flat top, asymmetric crown, broken top, forked top, relatively large branches, etc. These trees have important habitat value and human values regardless whether they are large. The BLM has not explained why it cannot use the Van Pelt guidelines[127] to identify tree age or, as science improves, use the best available information and err on the side of caution to ensure that trees older than 150 years (regardless of size) are not inadvertently cut. A recent study supports the retention of slow growing old trees because they are relatively more resilient. The study found that slower-

[127] Van Pelt, R. 2008. Identifying Old Trees and Forests In Eastern Washington. Washington DNR. http://www.dnr.wa.gov/Publications/lm_hcp_east_old_growth_hires_part01.pdf.

growing older trees tend to channel their energy into structural support and defense compounds to "maximize durability while minimizing … damage". Black, Colbert, & Pederson. 2008. Relationship between radial growth rates and lifespan within North American tree species. Ecoscience 15(3), 349-357 (2008). http://fate.nmfs.noaa.gov/documents/Publications/Black_et_al_2008_Ecoscience.pdf. *See also*. Box 8 of Franklin, J.F., Johnson, K.N., et al 2013. Restoration of Dry Forests in Eastern Oregon – A Field Guide. The Nature Conservancy, Portland, OR. 202 pp. http://nature.ly/dryforests; and Tobias Züst, Bindu Joseph, Kentaro K. Shimizu, Daniel J. Kliebenstein and Lindsay A. Turnbull, Using knockout mutants to reveal the growth costs of defensive traits, in: Proceedings of the Royal Society B, 2011, Jan. 26, doi:10.1098/rspb.2010.2475. The FEIS/PRMP does not explain BLM's failure to address this significant environmental issue as required by NEPA.

XVII. LANDSLIDES

Logging and road building can increase the risk of landslides, especially during earthquakes. BLM says that the risk of landslides from a Cascadia Subduction earthquake is "highly improbable" because the last large earthquake was 300 years ago and the average interval between quakes is 500-600 years. RTC 194, FEIS/PRMP at 1924-25. This is an inaccurate and incomplete analysis. 500-600 years is an average; shorter intervals are possible. Also, BLM failed to recognize that the subduction zone off Oregon is more active than the Cascadia fault as a whole. Geologists point out that "the intervals between quakes have ranged from a few hundred to nearly a thousand years. But evidence from seafloor cores suggests that the southern half of the fault — off the Oregon and Northern California coast — is much more dangerous, rupturing every 250 years. … In recent years, Oregon State University researcher Chris Goldfinger has collected dozens of additional cores, which he says show evidence of 19 quakes of magnitude 9 or greater that ripped the entire length of the subduction zone in the past 10,000 years. Goldfinger also argues that thinner layers in cores from the southern half of the fault show it generates earthquakes much more frequently. … The USGS recently boosted its estimates of earthquake risk in the Pacific Northwest, partly based on Goldfinger's work suggesting more frequent quakes off Oregon and Northern California." http://www.seattletimes.com/seattle-news/how-often-does-cascadia-fault-rip-scientists-disagree/ BLM's failure to disclose or evaluate the implications of this major landslide risk in light of the available evidence is arbitrary and contrary to NEPA.

All of the BLM developed action alternatives in the FEIS and the proposed RMP call for *increasing* the size of the transportation network despite the fact that the BLM already has a $317 million-dollar deferred road maintenance backlog of which $127 million is within the Medford District. Hence the range of action alternatives is arbitrarily narrow and excludes consideration of a reasonable action alternative that would sharply limit or avoid altogether new road construction.

Additionally, the proposed new road construction under the PRMP is likely to have disproportionately large impacts on watershed and wildlife values. As acknowledged by the BLM "within the sediment delivery distance (200 feet), newly constructed roads would primarily

be constructed to provide access for forest thinning within the riparian reserves" thereby harming water quality and terrestrial wildlife habitat connectivity. As stated on page 1925 of the FEIS the "new road construction within the sediment delivery distance of streams almost entirely overlays the Riparian Reserve [land allocation] under all alternatives and Proposed RMP." Already 36% of the 14,330 miles of inventoried BLM logging roads (that the agency cannot afford to maintain to standard) are located within 200' feet of streams according to the FEIS. Every action alternative considered in the FEIS will contribute to the road maintenance backlog to the detriment of aquatic and wildlife objectives and values.

The Medford District will be disproportionately impacted by the BLM's proposal to increase the size of the existing transportation system. The Medford District has by far the most projected new road construction to access timber harvest with the lowest comparative volume per acre.

The expansion of the road system as proposed in the FEIS/PRMP is inexplicably at odds with the plan's stated purpose and need and contrary to BLM's legal duties under the O&C Act and other laws.

XVIII. TRAVEL MANAGEMENT

The BLM is deferring transportation management planning and analysis of environmental and social effects to a hypothetical future NEPA planning process while preparing to authorize a certain and significant increase in the size and impacts of its road system in this planning process. NEPA does not permit such a piecemeal or act-now-analyze-later approach.

The FEIS and Proposed RMP do not fully establish the legal existing footprint of travel routes or curtail additional route proliferation while the travel planning process is in deferment. BLM's Travel and Transportation Manual (Manual 1626) requires BLM to complete certain tasks through the RMP if it is deferring travel planning, as it is here. These required tasks include producing a map of the known network of transportation linear features and defining interim management objectives for areas where route designations were not completed concurrent with the RMP.[128] According to both the TMP Manual and Handbook, delineating travel networks can be deferred for up to 5 years after signing the Record of Decision for the RMP.[129] However, BLM must also come up with an action plan and planning schedule to indicate areas that will have travel planning completed concurrently with the RMP process and which areas will be deferred.[130]

There are important and required outstanding measures in BLM Handbook H-8342 that have not been met for a deferred travel plan but BLM does not explain this failure to follow its own guidelines.

[128] BLM Manual 1626.06(B)(2).
[129] BLM Manual 1626.06(B)(3); BLM Handbook 8342(I)(C)(ii).
[130] BLM Handbook 8342(IV)(B).

BLM Handbook 8342 states that BLM must assess the current ground transportation linear feature database during the pre-planning stage for the RMP since it is essential that a credible baseline inventory is available for eventual TMP efforts and to decide which areas are higher priority for designating routes.[131] Thus, even though BLM can defer designation of a travel network, it still must document the current system of existing authorized routes now, during the RMP planning stage. The BLM states that it is "currently working on an inventory of all user-created motorized and non-motorized routes within the decision area . . . as a baseline to guide future implementation-level route designations within the areas that are designated 'Limited to Existing Routes.'" (emphasis added). The Proposed RMP goes on to state that "[r]ecreation routes (authorized and unauthorized) have been created in response to demand for trail-based recreation." BLM cannot properly add user-created or unauthorized routes to its baseline inventory maps of the existing travel network as these routes were not authorized by the agency. The baseline route inventory should only include those routes that were legally created or authorized by the agency and all other routes should be slated for closure and rehabilitation.

Handbook 8342 indicates that the BLM should consider completing certain units for travel planning during the RMP process, such as smaller areas or sub-units that have sufficient travel and transportation information, areas that are most heavily used, or areas that have existing social conflicts, resource concerns, or a defined need for route definition or development for administrative, public access or other needs first.[132] The Handbook also states that RMPs should "provide a clear planning sequence, including public process (focusing on user groups and stakeholders), initial route selection criteria, and constraints for subsequent road and trail selection and identification."[133]

While the FEIS and Proposed RMP describe a process for selecting a final road and trail network, it does not identify areas that should be prioritized for travel planning after the ROD is signed. The FEIS also does not provide a clear planning sequence or schedule for completing travel planning for the planning area within 5 years of signing the ROD. Setting criteria, priority areas and a schedule for completion will provide both the agency and the public with the expectations that travel planning will occur in a reasonable and timely fashion, in addition to following the policy guidance of BLM Handbook 8342.

One good example of setting a schedule for deferred travel planning at the RMP level is in the Proposed RMP for the Lander Field Office. In the Lander Proposed RMP the BLM set forth priority ranking, timeframes for completion and interim and final restrictions for each travel management planning zone. BLM has not explained why this could not be done for the current PRMP. The Lander Field Office approach to deferred travel planning is reasonable and the BLM could and should use it, or some equivalent process, in the FEIS/PRMP but has improperly and arbitrarily failed to do so.

[131] BLM Handbook 8342(IV)(A).
[132] BLM Handbook 8342(IV)(B).
[133] BLM Handbook 8342(IV)(H)(iv)(2).

The BLM also has broad authority to close areas in the interim to protect public lands and resources.[134] The BLM must immediately close any areas where the agency finds that off-road vehicles are causing or will cause considerable adverse effects upon natural or cultural resources.[135] The BLM has policy guidance (IM 2013-035) that describes how RMPs and TMPs should address temporary closures including defining thresholds for when ORV related closures will take place. BLM has not conducted this analysis or explained why it cannot do so.

Handbook 8342 provides that the RMP should "[o]utline additional data needs and a strategy for collection."[136] In addition, the Handbook states that "[i]t is essential that the BLM identify all existing routes to the extent feasible."[137] Throughout Western Oregon BLM lands non-motorized trails have been an underrepresented linear feature through BLM travel planning. The same is true with considering non-motorized recreational experiences. Hence BLM must ensure that it is incorporating all non-motorized trail data from the public but it has not done so. In order to do so, BLM should gather as much data from the public on non-motorized trails as possible including trail location, use, time of use and compatibility with other uses. BLM should make clear in its data calls that data should be submitted in line with the step-by-step process outlined in *BLM Technical Reference 9113-1, Planning and Conducting Route Inventories.*

The following guidance set out in BLM Handbook 8342 provides additional considerations for gathering data from non-motorized users of the public lands in the decision area:

> While the BLM should collect as much relevant information as possible during the RMP planning process, the data collection should be informed and guided by the issues and concerns identified by the ID team and through public scoping. Transportation data at the RMP level may tend to overlook the most recently created routes and fail to identify trails to a greater degree than roads. Input and collaboration with trail user groups, research through guidebooks and online trail information sources may be helpful in identifying areas where additional field data collection is important. Areas that are important local or regional destinations for trail use, or where dispersed recreation activities are highly popular (e.g., rockhounding) may require an interactive approach to data collection and public review of the transportation inventory.
>
> The importance of making effective use of GIS technology cannot be overemphasized. For example, GIS can be utilized in the public involvement process to allow the public to have an interactive interface with the route data being presented. This can greatly facilitate the public's ability to understand and comment on the accuracy of the data that will be evaluated for possible inclusion

[134] 43 C.F.R. § 8364.1.
[135] 43 C.F.R. § 8341.2.
[136] BLM Handbook 8342(IV)(H)(iv)(1).
[137] BLM Handbook 8342(V)(D).

in the designated route network (see Appendix 9 for examples of how GIS can facilitate the TTM process).

The BLM must map and document the existing authorized route system as of the date of this RMP and clarify that user-created or unauthorized motorized routes will not be considered as part of the baseline inventory. The BLM also must prioritize areas for comprehensive travel planning with interim closures and restrictions and specific timeframes for completion, no later than 5 years from the signing of the ROD. And the BLM must gather inventory data from the public related to non-motorized travel routes to inform the travel planning process. The agency's failure to take the above steps consistent with its own guidance and regulations is arbitrary and contrary to law.

In response to the growing use of ORVs and corresponding environmental damage, Presidents Nixon and Carter issued executive orders mandating that BLM only allow ORV use on the public lands if certain conditions were met.[138] Pursuant to those orders, BLM regulations require that designated ORV "areas and trails shall be located:

(1) "to minimize damage to soil, watershed, vegetation, air, or other resources of the public lands, and to prevent impairment of wilderness suitability;"

(2) "to minimize harassment of wildlife or significant disruption of wildlife habitats;" and

(3) "to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors."[139]

The BLM's Travel Management Manual 1626 states that BLM must pay particular attention to thoroughly documenting how the minimization criteria are considered in making both ORV designations (Manual 1626.06(A)(2)(a)) and route designations (Manual 1626.06(B)).

Together these mandates impose a rigorous process and high threshold for the BLM to designate ORV areas and travel routes in the planning area. The BLM must carefully assess and document how *each* designated area or route will: (1) minimize impacts to the soil, watershed, vegetation, air, wilderness or other resources, and (2) minimize conflicts between motorized users and the visitors engaging in quiet, non-motorized forms of recreation. The BLM must be

[138] Exec. Order No. 11,646, 37 Fed. Reg. 2877 (Feb. 9, 1972); Exec. Order No. 11,989, 42 Fed. Reg. 26,959. May 25, 1977.
[139] 43 C.F.R. § 8342.1(a)-(c); *see also* Exec. Order 11,644, § 3(a) (similar language).

sure to address these and other impacts through careful application of the minimization criteria on a route-by-route basis.[140]

The Proposed RMP provides that "[t]he BLM applied designation criteria in 43CFR 8342 when designating lands as open, limited, or closed to off-road vehicles. All designations are based on the protection of the resources of the public lands, the promotion of the safety of all the users of the public lands, and the minimization of conflicts among various uses of the public lands." However, the Proposed RMP provides no information on how the minimization and other criteria were applied. This is plainly contrary to law and arbitrary.

A number of federal courts have held that BLM and other federal land management agencies must *apply* the so-called "minimization criteria" to area and trail designations and *articulate* a reasonable basis for concluding that the designation minimizes impacts to important resources. For example, in addressing a BLM planning process, one federal court held that "[a]cknowledging the minimization standards is not the same as applying them."[141] Further, the BLM must provide sufficient information "for someone other than the BLM to know why or how the routes were chosen."[142] And the "[r]ecord does not demonstrate whether or how [the agency] implemented and incorporated the minimization criteria" (under analogous Forest Service regulations)[143] (detailed survey and inventory of routes inadequate where "there is nothing in the record to show that the minimization criteria were in fact applied when OHV routes were designated").

The Ninth Circuit Court of Appeals recently struck down a plan for failing to properly apply the minimization criteria.[144] In *WildEarth Guardians*, the Ninth Circuit held that, "[w]hat is required is that the Forest Service document how it evaluated and applied the data on an area-by-area basis with the objective of minimizing impacts."[145] "Moreover, as various district courts have held, 'mere consideration of the minimization criteria is not sufficient to comply with the regulation.'"[146]

Thus, it is unequivocally clear that the BLM cannot designate ORV areas or routes without applying the minimization criteria and documenting how it was applied for individual designations. The Proposed RMP fails to show how the minimization criteria were applied to the decision area.

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[140] *See, e.g.*, *SUWA*, 981 F. Supp. 2d at 1105 (BLM must apply minimization criteria "at the route specific level" to assess "the effects of route designations," and must provide sufficient information "for someone other than the BLM to know why or how the routes were chosen").
[141] *S. Utah Wilderness Alliance v. Burke*, 981 F. Supp. 2d 1099, 1104-06 (D. Utah 2013).
[142] *Id.* at 1105. *See also, Idaho Conservation League v. Guzman*, 766 F. Supp. 2d 1056, 1071-74 (D. Idaho 2011)
[143] *Ctr. for Biological Diversity v. BLM*, 746 F. Supp. 2d 1055, 1071-81 (N.D. Cal. 2009)
[144] *WildEarth Guardians v. USFS*, No. 12-35434 (9th Cir. June 22, 2015).
[145] *Id*., slip op. at 24.
[146] *Id*., slip op. at 25.

The State Director's decision to open 668,601 acres for motorized use on the Medford District by changing the designation from Limited to *Designated* Routes and from Limited to *Existing* Routes, FEIS/PRMP at 1598, is arbitrary and contrary to law. Currently all classes of motorized users on most Medford District lands are required to stay on designated routes. These designated routes are designed and maintained for motorized use. The State Director's decision would "legalize" unlimited off road motorized use by all classes of motor vehicles on hundreds of miles of "existing" user created routes and abandoned logging routes. The proposed authorization of motorized use of (existing) user created routes is certain to further exacerbate serious sedimentation of headwater streams and critical stream habitat. Many of these user-created routes and abandoned logging routes are in Riparian Reserves. The State Director's decision is in direct conflict with, among other requirements, recovery of listed species and maintaining clean water. Motorized use of user created routes will exacerbate sediment pollution and unrestricted noise disturbance will disturb northern spotted owls nesting areas. These lands should have remained closed to motorized use on "existing" user created routes pending development of the travel management plans. These plans would authorize motorize use for properly designed and maintained routes that do not pollute streams or disturb NSO nesting. The State Director's decision, therefore, is contrary to law and the basis for it in light of the available evidence has not been disclosed or explained.

A Medford District hydrologist inspects severe sedimentation from motorized use. The PRMP would allow motorized use on "existing" routes through streams such as the one shown above. Clean water would not be maintained.

This existing 'route' in the Medford District is an eroding gully nearly 3 ft. deep. The PRMP would change the closed status of "existing" routes from closed to open for motorized use. Existing routes would remain open for at least 5 years while travel management plans are developed.

The State Director decision to open existing routes for motorized use on hundreds of thousands of acres also is illegal because the BLM did not consult with NMFS and USFWS about consequences to listed fishes and birds from these designations. The Biological Assessment provided to USFWS and NMFS must include full and complete descriptions of environmentally damaging changes in motorized use designations, spatial extent of specific ERMAs overlapping Riparian Reserves and LSR, and subsequent off road motorized development intentions for ERMAs in order to be adequate to comply with the ESA.

Authorizing vastly increased motorized use via the PRMP is a decision that requires section 7 consultation because motorized use on existing routes would now be "legal" for at least 5 years while travel management plans are developed. Motorized users would now be free to operate on routes that are contributing to sediment pollution in critical habitat and noise that

disturbs nesting NSO. Similarly the decision to identify dozens of ERMA's that contain critical habitat for fish and critical habitat for NSO requires section 7 consultation as well.

Deferring consultation for PRMP increased motorized use of existing routes and deferring consultation on ERMAs to project level decisions is contrary to law. "The Secretary of the Interior withdrew the Records of Decision for the 2008 FEISs in July 2009, because the approval of the Records of Decision was in 'legal error' because the BLM had not conducted Section 7 consultation under the ESA." FEIS/PRMP at 1909. The PRMP repeats the same 'legal' error made in 2008 with motorized use changes and designations of ERMAs with no Section 7 consultation.

We are particularly concerned about the Mungers Butte ERMA no. 183 that has serious conflicts with NSO, water quality, and existing hiker use. ERMAs with obvious motorized conflicts with Riparian Reserves, Late Successional Reserves and hikers without ESA compliance or full disclose of the effects of these decisions is arbitrary and contrary to law.

XIX. GRAZING

Grandfathering the ongoing defective grazing allotments in the PRMP is arbitrary and contrary to law. *See* FEIS Appendix L. Our group comment letter identified serious flaws in impact analysis about livestock grazing and the inadequacy of Standards for Rangeland Health to protect critical fish habitat within riparian reserves. The Medford District is particularly negligent in protecting streams from grazing impacts. In general, livestock are allowed to damage riparian vegetation and trample streambanks, which adversely affects listed coho salmon. This is contrary to the PRMP purpose to protect listed species and to BLM's ESA recovery duties. Livestock feces and urine pollute streams contrary to law and the PRMP purpose to provide clean water. The PRMP has no specific guidance for managing livestock within riparian reserves. Deferring to Standards for Rangeland Health has not proven to be effective (see our Group Comments). Improving the "range" for livestock use does not mean stream habitat for ESA listed fishes is improved.

The State Director's decision to authorize grazing on 137 grazing allotments covering 355,326 acres, FEIS/PRMP at 479; FEIS, Appendix L, also is illegal because the BLM did not conduct Section 7 consultation for this programmatic decision with NMFS and USFWS about conservation measures to mitigate consequences to ESA listed species. The State Director's decision is also wrong because the PRMP fails to identify a schedule for improving 12 allotments that do not meet rangeland standards. FEIS/PRMP at 485. The State Director decision is also wrong because the PRMP fails to identify a time table for needed rangeland health assessments on 66 allotments totaling 128,551.

The Medford and Klamath Falls Districts have had nearly 20 years to complete Rangeland Health Assessments yet the FEIS/PRMP inexplicably sets no schedule for completing these necessary assessments. Furthermore, BLM Rangeland Health Assessments have been found not to be scientifically valid due to poor sampling design for large allotments. The failure

to require the missing assessments and the failure to require that they meet rigorous scientific standards is arbitrary and illegal and will allow adverse environmental effects to continue undisclosed and unanalyzed.

ESA-listed wolves, northern spotted owl, Oregon spotted frogs, coho salmon, and shortnose suckers are all potentially affected by PRMP livestock grazing. Wolves are known to have travelled in some allotments and can be expected to expand their range into more allotments. Section 7 consultation for all authorized grazing allotments is therefore required for the FEIS/PRMP. But the FEIS/PRMP currently lacks discussion of permittee requirements needed to prevent or reduce undesirable interactions of wolves with livestock. The annual authorization of livestock into areas vulnerable to wolf depredation makes federally listed wolves vulnerable to being killed due to their tendency towards predation on livestock.

The Secretary of the Interior withdrew the Records of Decision for the 2008 FEISs in July 2009, because the approval of the Records of Decision was in 'legal error' because the BLM had not conducted Section 7 consultation under the ESA. FEIS/PRMP at 1909. The BLM must likewise undertake a comprehensive section 7 consultation for the FEIS/PRMP that addresses the above issues in order to comply with the ESA.

XX. OVERCUTTING

The State Director is wrong for assuming that thinning can maintain dispersal habitat with 40% canopy and spotted owl NRF habitat with 60% canopy. FEIS/PRMP at 1112. Failure to maintain post-harvest canopy standards means that BLM cannot assure USFWS that take is not occurring. This is important because once NSO habitats are overcut the "error" cannot be corrected. In addition to overcutting, unanticipated blowdown is significantly reducing canopy as reported by Medford BLM District. The BLM cannot comply with the ESA if it does not fully acknowledge unauthorized NSO downgrades and removals in accordance with project BiOps.

Early in 2015, Medford District BLM became aware that NSO habitat was degraded or removed in 4 adjacent timber sales contrary to the Environmental Assessments (EA), Decisions and BiOps that declared such habitat would be retained through "treat and maintain" silvicultural prescriptions. As a letter from the BLM dated January 27, 2016 acknowledges, subsequent monitoring revealed that habitat had not been maintained on 424 of 472 acres of NSO habitat units in the 4 timber sales, located on the Ashland Resource Area. This letter is or should be in the agency's possession and it should have been aware of it at the time of the FEIS/PRMP.

Alarmed by this situation, USFWS instructed BLM to conduct a detailed investigation to determine how widespread the problem is, and to identify the causes of the problem. According to its resulting Medford BLM Post-Harvest Monitoring Report (also in the agency's possession), BLM sampled 24% of the total acres of NRF (Nesting Foraging Roosting) units with Treat and Maintain (T&M) prescriptions harvested since 2008 (458 acres of a total of 1,912 T&M prescription acres). BLM found that 51% (232 acres) of the sample was overcut, failing to meet minimum canopy cover levels for NRF habitat on all 3 Resource Areas in the Medford District.

This discrepancy between the amount of NSO habitat USFWS believes to exist and the much smaller amount of habitat that still actually exists after thinning invalidates the current habitat baselines. Extensive monitoring will be necessary to ascertain the true extent of damaged, destroyed, and still existing NSO habitat in thinned stands. Without an updated baseline, BLM's FEIS/PRMP cannot be considered accurate in predicting the trade-offs between increased logging and adequate retention of NSO habitat. More importantly, the BLM cannot assure that future timber sales are not taking NSO because they cannot assure that thinned habitat is maintaining habitat as claimed. *See* FEIS/PRMP at 2000-2004.

Although this overcutting was documented in the Medford District, it is reasonable to suspect similar downgrading and removal of NSO habitat in other districts. Other districts have not done any scientifically accurate post-harvest canopy monitoring with the moosehorn technique used by Medford BLM. BLM cannot legally and rationally make a final decision regarding revised RMPs unless it completes a statistically sound post-harvest field monitoring of NSO habitat statewide and incorporates those results into the FEIS/PRMP analysis.

In addition to Medford District documented overcutting of NSO habitat, Medford District also documented that thinned units are experiencing unanticipated blowdown which contributed to NSO habitat downgrading and removal. This is also important because BLM did not model windthrow in vegetation modeling. FEIS/PRMP at 314 & n. 56. BLM also must correct this omission before making a final RMP decision.

The FEIS Monitoring Plan, Appendix V, fails to require any post-harvest monitoring of canopy to determine if the treat-and-maintain minimum canopy percentages are achieved for NSO habitat (i.e., 40% for dispersal and 60% for NRF). Failure to monitor post-harvest canopy percentages for NSO habitat assures that overharvest and windthrow losses will remain unreported. This failure of the monitoring plan in light of available information about these issues is arbitrary and contrary to law, including the ESA.

XXI. PORT ORFORD CEDAR

The State Director erred in the FEIS/PRMP by not developing more effective management of roads to control the spread of Port Orford Cedar root disease. The FEIS failed to adequately analyze how motorized use needs to be effectively controlled to limit the spread of Port Orford Cedar root disease. For example, the FEIS/PRMP opens up hundreds of thousands of existing routes to motorized use, FEIS/PRMP at 1598, that would increase root disease risk for critical coho salmon stream habitat. The PRMP would allow road construction and logging equipment into Riparian Reserves that would increase risk of disease spread. The PRMP tiers to the POC impact statement ROD but fails to demonstrate that this strategy has been effective in controlling the spread of POC root disease in the planning area. In addition, the existing POC disease control strategy is not being implemented in any substantive way in the PRMP. In light of the available evidence, land allocations need to have more restrictive public use and contract use of roads where the risk of root disease spread is high (e.g., Williams Creek watershed in Medford District, entire Coos Bay district). The ERMAs were not screened for POC root disease

risk. The Mungers Butte ERMA should be dropped due to high POC root disease risk from anticipated increased motorized use. These omissions are irrational in light of the available evidence.

XXII. SNAGS AND DEAD WOOD

BLM's approach to management of snags and dead wood habitat is arbitrary and capricious. BLM management direction in Appendix B of the FEIS/PRMP calls for creation of just a few snags per acre (or none at all) immediately after harvest as shown in Table B-2, below.

Table B-2. Snag creation levels within the Harvest Land Base

District/ Field Office	Province	Number of Snags/Acre Created Within 1 Year of Yarding the Timber in the Timber Sale		
		> 20" DBH	> 10" DBH	Total Snags
Coos Bay	All	1	-	1
Eugene	OR Coast Range	1	-	1
	Western Cascades	1	-	1
Klamath Falls	All	1	-	1
Medford	All	-	-	-
Roseburg	OR Coast Range	3	-	3
	Western Cascades	3	3	6
	Klamath	-	-	-
Salem	OR Coast Range	1	-	1
	Western Cascades	1	-	1

There are several problems with this approach that BLM does not address in the FEIS. First, snags are a critical resource for a wide variety of wildlife (and ecosystem processes). New science indicates that far more snags are needed to meet the needs of species. Forest management over the past century has severely depleted snag and dead wood habitat in western Oregon. Second, snags recruitment is a process that must take place continuously over time. Unlike green trees, snags do not remaing standing for long periods. They must be continuously replaced by recruitment of new snags from the pool of available green trees. Creating a few snags at a point in time does not account for the ongoing need to recruit snags over time. BLM has not accounted for the fact that logging adversely affects snag recruitment in two ways: logging increases the vigor of the remaining green trees so they are less likely to die and be recruited as snags, and logging exports green trees from the forest so they cannot ever become snags.

In adopting new RMPs BLM has a duty to take a hard look at how its management plans will support or diminish the critical role that dead wood plays in the ecosytem, and must consider all the new information that has accumulated since the old standards were developed in 1979.

In a dynamic ecosystem, life may be fleeting but the snags and logs that survive disturbance provide very critical temporal links from one stand to the next. Under natural conditions, a forest hands down a large legacy of living and dead material from one stand to another even after an intense disturbance. Even non-stand-replacing disturbance creates pulses of dead material that are critical for forest ecosystems. Logging, especially regeneration logging, removes the vast majority of the structural legacy components and this will cause a variety of long-lasting adverse impacts as described in the following:

1. Franklin, J.F., Lindenmayer, D., MacMahon, J.A., McKee, A., Magnuson, J., Perry, D.A., Waide, R., and Foster, D. 2000. Threads of Continuity. Conservation Biology in Practice. [Malden, MA] Blackwell Science, Inc. 1(1) pp9-16.

2. William F. Laudenslayer, Jr., Patrick J. Shea, Bradley E. Valentine, C. Phillip Weatherspoon, and Thomas E. Lisle *Technical Coordinators.* Proceedings of the Symposium on the Ecology and Management of Dead Wood in Western Forests. PSW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/.

3. Lofroth, Eric. 1998. The dead wood cycle. In: Conservation biology principles for forested landscapes. Edited by J. Voller and S. Harrison. UBC Press, Vancouver, B.C. pp. 185-214. 243 p. http://www.for.gov.bc.ca/hre/deadwood/DTrol.htm.

4. Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 *in Wildlife-Habitat Relationships in Oregon and Washington* (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001) http://www.fs.fed.us/wildecology/decaid/decaid_background/chapter24cwb.pdf

5. Stevens, Victoria. 1997. The ecological role of coarse woody debris: an overview of the ecological importance of CWD in B.C. forests. Res. Br., B.C. Min. For., Victoria, B.C. Work. Pap. 30/1997. http://www.for.gov.bc.ca/hfd/pubs/docs/Wp/Wp30.pdf.

6. Hagar, Joan, 2007, Assessment and management of dead-wood habitat: USGS Administrative Report 20071054, pp. 1-32. http://pubs.usgs.gov/of/2007/1054/pdf/ofr20071054.pdf

The Forest Service even has a public education program called “Animal Inn” intended to inform the public of the value of dead wood, unfortunately the BLM has not recognized these values in the FEIS/PRMP:

> Nearly a third of all forest creatures depend on standing dead or fallen trees for their survival. ANIMAL INNS provide shelter, nest sites, and feeding areas for over 1200 species of birds, mammals, amphibians, and reptiles; over 60% of which feed on insects. These insect-eating species act as natural biological regulators to dampen the effects of insect outbreaks in forested lands, thereby

performing an important ecosystem function. Fish benefit from trees that have fallen into stream channels.

http://web.archive.org/web/20021122150003/http://www.fs.fed.us/r6/nr/wildlife/animalinn/basicneed.htm.

See also
http://web.archive.org/web/20021017194337/http://www.fs.fed.us/r6/nr/wildlife/animalinn/habitat.htm

Several major lessons have been learned in the period 1979-1999 that have tested critical assumptions of earlier management models:

- Calculations of numbers of snags required by woodpeckers based on assessing their "biological potential" (that is, summing numbers of snags used per pair, accounting for unused snags, and extrapolating snag numbers based on population density) is a flawed technique. Empirical studies are suggesting that snag numbers in areas used and selected by some wildlife species are far higher than those calculated by this technique.[226]

- Setting a goal of 40% of habitat capability for primary excavators, mainly woodpeckers,[369] is likely to be insufficient for maintaining viable populations.

- Numbers and sizes (dbh) of snags used and selected by secondary cavity-nesters often exceed those of primary cavity excavators.

- Clumping of snags and down wood may be a natural pattern, and clumps may be selected by some species, so that providing only even distributions may be insufficient to meet all species needs.

- Other forms of decaying wood, including hollow trees, natural tree cavities, peeling bark, and dead parts of live trees, as well as fungi and mistletoe associated with wood decay, all provide resources for wildlife, and should be considered along with snags and down wood in management guidelines.

- The ecological roles played by wildlife associated with decaying wood extend well beyond those structures per se, and can be significant factors influencing community diversity and ecosystem processes.

Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 *in Wildlife-Habitat Relationships in Oregon and Washington* (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001)
http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf.

> "In general, wildlife species that use dead wood for nesting, roosting, or foraging prefer larger diameter logs and snags (>20 inches). Although we tallied dead wood in this size class throughout Oregon, the estimated density may not be sufficient for some wildlife species. For example, inventory results show a mean of almost 3 snags per acre in this size class in western Oregon and 1 per acre in eastern Oregon. This may indicate that large-diameter snags are currently uncommon in Oregon habitat and that management may be necessary to produce a greater density of large snags."

Donnegan, Joseph; Campbell, Sally; Azuma, Dave, tech. eds. 2008. Oregon's forest resources, 2001–2005: five-year Forest Inventory and Analysis report. Gen. Tech. Rep. PNW-GTR-765. Portland, OR: U.S. Forest Service, Pacific Northwest Research Station. 186 p. http://www.fs.fed.us/pnw/publications/gtr765/pnw-gtr765b.pdf.

The FEIS/PRMP analysis failed to consider significant new information on pileated woodpeckers including:

a. Pileated woodpeckers need more and larger roosting trees than nesting trees. They may use only one nesting tree in a year, they may use 7 or more roosting trees.

b. West of the Cascades, pileated woodpeckers tend to prefer nesting in decadent trees rather than snags.

c. West of the Cascades, standing snags are important foraging sites because down wood may be too wet to harbor carpenter ants (the favored foods of the pileated woodpecker).

d. West of the Cascades, Pacific silver fir is often used for nesting (but not roosting).

e. West of the Cascades, western red cedar is often used for roosting (but not nesting).

Determining the pileated woodpecker's population potential based on nesting sites alone will not provide adequate habitat to sustain this species and places it at unnecessary risk. This new information is not recognized in current management requirements at the plan or project level. *See Science Findings* Issue 57 (October 2003) Coming home to roost: the pileated woodpecker as ecosystem engineer, by Keith Aubry, and Catherine Raley http://www.fs.fed.us/pnw/sciencef/scifi57.pdf.

> **What's so important about snags and down logs?**
>
> Snags provide homes to owls, woodpeckers, bats, squirrels, bluebirds, wood ducks, swallows, mergansers, weasels, raccoons and many other animals. More than 50 species of birds and mammals use snags for nesting, feeding and shelter. A lack of snag cavities for nesting can limit populations of some bird species.

> Snags larger than 20 inches DBH are in short supply on private lands. Snags can be created from live trees, and wildlife respond quickly to their availability.
>
> You can reduce the cost of leaving snags by selecting rotting or deformed trees. In eastern Oregon, down logs are used by 150 species of wildlife, including amphibians, reptiles, birds and mammals. Logs are also important to certain insects, fungi and plants. … [A] forest without down logs may have fewer species of plants and animals.

Oregon Forest Resources Institute 2011. Oregon' Forest Protection Laws – An Illustrated Manual, Revised Second Edition.
http://www.forestresourceinstitute.com/images/or_for_protect_laws_2011.pdf.

Snags are not just nice to have, they are an essential feature of old forests. A stand of big trees without snags is not a healthy forest. The ICBEMP Scientific Analysis Group (SAG) review of selected terrestrial vertebrate populations used "large snag density as a proxy for the structural quality of old-forest habitats." and the SAG found that:

> Key model factors contributing most strongly to low environmental index values and low population outcomes—
>
> *Families 1 and 2 (Old-forest families)—*
>
> • Low recruitment of large snags composed of shade-intolerant tree species, such as ponderosa pine, western larch, and western white pine, as indexed by moderate and high HRV (Lewis' woodpecker (migrant), pygmy nuthatch, flammulated owl), are the key factors contributing to low environmental index and low population outcomes.
>
> • Low quality of old-forest structural conditions (lack of diversity of size and decadence of large trees, large snags, and large logs), as indexed by declining large snag and/or large log trends (northern goshawk [summer], American marten, hoary bat), are the key factors. …
>
> *Long-eared myotis (Family 7)—*
>
> • … decreasing snag trends (indexing low availability of roost sites) contribute to low environmental index and low population outcomes. …
>
> *Western bluebird (Family 8)—*
>
> • High HRV departure and declining large snag density (indexing a lack of shade-intolerant tree species recruited as snags) contribute to the low environmental index and low population outcomes.

Martin G. Raphael, Richard S. Holthausen, Bruce G. Marcot, Terrell D. Rich, Mary M. Rowland, Barbara C. Wales, Michael J. Wisdom, 2000. DRAFT Effects of SDEIS Alternatives on Selected Terrestrial Vertebrates of Conservation Concern within the Interior Columbia River Basin Ecosystem Management Project, March 2000, revised June 23, 2000 and November 14, 2000.

The PRMP/FEIS must address all of this new scientific information about the role of snags in a functioning ecosystem but fails to do so. This failure renders the FEIS inadequate under NEPA and the PRMP arbitrary and contrary to law.

XXIII. SPOTTED OWL

The FEIS/PRMP says "BLM assumed that the restoration approach taken in the Late Successional Reserve in the dry forest would include stand density reductions, cultivation of large trees with old-growth characteristics, and introductions of heterogeneity into increasingly uniform stands, and treatments to reduce fire risk adjacent to high-value habitat." The FEIS does not adequately disclose the direct, indirect, and cumulative adverse effects of these habitat-modifying treatments that will likely be conducted with commercial logging that removes primary constituent elements of spotted owl habitat.

The State of Oregon recommended that BLM adopt a requirement for northern spotted owl surveys in the Harvest Land Base. BLM responded "Congress enacted legislation pertaining to the management of the BLM timberlands pursuant to the O&C Act which preempts state law purporting to govern administration of the O&C lands, including the Oregon Forest Practices Act." RTC 340, FEIS/PRMP at 1984. BLM is in error. There is no federal preemption of state wildlife laws. Moreover, this failure is also in violation of federal laws and regulations that apply to the BLM.

BLM dismisses public concerns that logging to reduce the effects of fire will have greater adverse effects than fire itself, saying "The treatment of a stand to improve its fire resiliency commonly reduces the immediate value of the stand for northern spotted owls. However, the effects of these treatments are temporary, they typically occur in younger forest stands that are of less value to northern spotted owls, and they are intended to protect adjacent older forest stands from fire ignition in the treated stand." RTC 344, FEIS/PRMP at 1985. This response is completely inadequate because BLM proposes to log to reduce fuels not just in "young forests" but also very often in forests that serve as suitable owl habitat. In fact, there is a loophole management guidelines for the PRMP for LSRs that allows widespread logging for fuel reduction even in stands that offer the highest quality suitable owl habitat. BLM failed to take a hard look at the information and analysis relevant to this issue, including but not limited to Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. V 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf.

BLM says that they may log to reduce fire effects for other purposes, not just to protect owl habitat, but they miss the key point which is that they failed to fully and accurately disclose the adverse effects of such logging on the spotted owl and other late successional wildlife. One of the key purposes of NEPA is to reveal and resolve such trade-offs. BLM failed that task.

BLM failed to follow the Revised Recovery Plan for the northern spotted owl, or explain and analyze the consequences of its failure to do so, in particular the RA32 recommendation to protect high quality owl habitat. BLM has failed to incorporate the analysis of the best owl scientists which would lead it to be more inclusive in defining habitat that meets the RA32 definition. *See, e.g.*, Eric D. Forsman, Robert G. Anthony, Katie M. Dugger, Elizabeth M. Glenn, Alan B. Franklin, Gary C. White, Carl J. Schwarz, Kenneth P. Burnham, David R. Anderson, James D. Nichols, James E. Hines, Joseph B. Lint, Raymond J. Davis, Steven H. Ackers, Lawrence S. Andrews, Brian L. Biswell, Peter C. Carlson, Lowell V. Diller, Scott A. Gremel, Dale R. Herter, J. Mark Higley, Robert B. Horn, Janice A. Reid, Jeremy Rockweit, Jim Schaberl, Thomas J. Snetsinger, and Stan G. Sovern. "Population Demography of Northern Spotted Owls." http://www.reo.gov/monitoring/reports/nso/FORSMANetal_draft_17_Dec_2010.pdf ("Our results and those of others referenced above consistently identify loss of habitat and Barred Owls as important stressors on populations of Northern spotted Owls. In view of the continued decline of Spotted Owls in most study areas, it would be wise to **preserve as much high quality habitat in late-successional forests for Spotted Owls as possible**, distributed over as large an area as possible. This recommendation is comparable to one of the recovery goals in the final recovery plan for the Northern Spotted Owl (USDI Fish and Wildlife Service 2008), but **we believe that a more inclusive definition of high quality habitat is needed** than the rather vague definition provided in the 2008 recovery plan. Much of the habitat occupied by Northern Spotted Owls and their prey does not fit the classical definition of "old-growth" as defined by Franklin and Spies (1991), and a narrow definition of habitat based on the Franklin and Spies criteria would exclude many areas currently occupied by Northern Spotted Owls.").

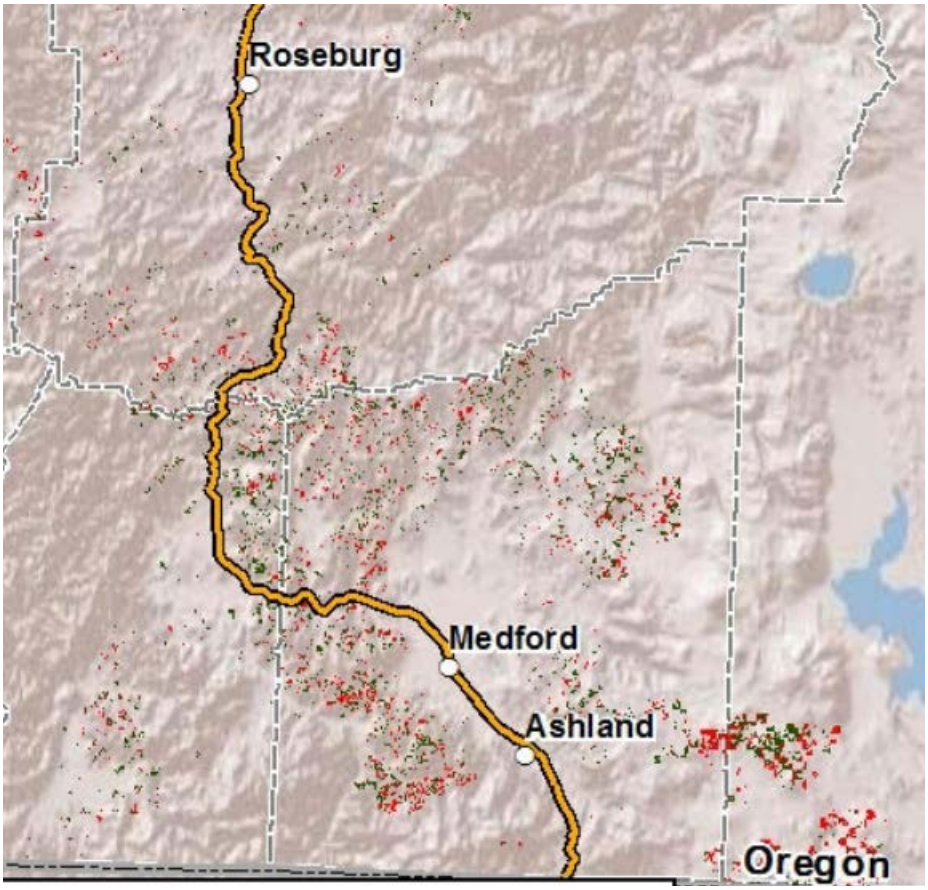
BLM failed to take a hard look at the adverse effects of logging on spotted owl dispersal and foraging. *See* FEIS/PRMP at 1991. In particular, BLM failed to address significant information on the habitat requirements of spotted owls during natal dispersal. BLM's decisions about logging are critical in light of the fact that BLM lands are located in critical locations for wildlife dispersal between the Cascades, Coast Range, and Klamath Mountains, and the fact that much of the checkerboard landscape is intensively managed for timber production and not managed for spotted owls. BLM must make informed decisions about how much logging to allow in between the LSRs, including the size of riparian reserves, standards for logging inside and outside reserves, whether to conduct regeneration harvest, how heavy to thin, etc. *See* Stan G. Sovern, Eric D. Forsman, Katie M. Dugger, Margaret Taylor. 2015. Roosting Habitat Use and Selection By Northern Spotted Owls During Natal Dispersal. The Journal of Wildlife Management 79(2):254–262; 2015; DOI: 10.1002/jwmg.834. ("**Roost Site Selection**. In contrast to the assumption that stands with relatively open canopies provide suitable dispersal habitat for spotted owls, our results suggest that dispersing juveniles selected stands for roosting that had

relatively high canopy closure (x = 66 ± 2%). … Two hypotheses could explain why dispersing owls selected closed-canopy stands. First, several researchers (Barrows 1981, Forsman et al. 1984, Weathers et al. 2001) have shown that temperature and precipitation appear to influence selection for roost trees and attributes within a roost tree, such as perch height and percent overhead cover. … Second, juvenile northern spotted owls may have selected for closed-canopy forest because their preferred prey were most abundant … **Landscape Scale Selection**. … [O]ur mean estimate of canopy closure from plots at roosts (66%), which was likely an underestimate of canopy cover, was considerably higher than the minimum values recommended by Thomas et al. (1990) [i.e., 50-11-40]. … **Management Implications**. … Based on our study, we recommend that managers should pursue a strategy that exceeds the canopy cover guidelines recommended by Thomas et al. (1990) when managing dispersal habitat for spotted owls. Based on our estimate of mean canopy closure (66%), and our estimate of mean canopy cover from overlaying a dot grid on the same areas (approx. 14% larger), we recommend that the target for canopy cover in stands managed for dispersing spotted owls should be at least 80%."). This study was or should have been available to the BLM at the time it prepared the FEIS/PRMP – and the agency should have been aware of it. This study shows that all of BLMs logging has potentially significant adverse effects on northern spotted owl dispersal, foraging, and roosting but BLM failed to take a hard look at the effects of proposed logging in light of this information, or identify any scientific information that would allow it to disregard this important information about spotted owl dispersal.

BLM failed to consider alternatives that provide increased protection and restoration of spotted owl habitat in areas managed by BLM that BLM admits are "indispensable" to owl conservation: "BLM-administered lands are indispensable:* To northern spotted owl reproduction, movement and survival in the southern half of the Coast Range, and in western and central portions of the Klamath Basin;* And in supporting north-south species movement through the southern portion of the Coast Range, and east-west species movement between the Coast Range and western Cascades." FEIS/PRMP at 928. Public comments suggested larger reserves, wider stream buffers, more limitations on logging that would degrade habitat. BLM failed to respond. The available scientific information, e.g., Sovern et al 2015 (and other material cited in the DEIS comments), indicates BLM should retain 80% canopy cover in key dispersal corridors. As areas that require special management, these areas should have be designated as ACECs. To inform the public and the decision-maker these areas should be mapped. BLM has not explained its failure to provide protection for owl dispersal habitat consistent with the available scientific information and this failure is arbitrary.

BLM failed to take a hard look at the consequences of logging in the important east-west connectivity corridor north of Medford and Grants Pass, and mostly south of the Douglas County line. The map below shows that there are many acres of unprotected older forests (i.e., not in reserves) in this area (green is unprotected forests over 120 years old. Red is unprotected forests 80-120 years old). BLM plays a critical role providing connectivity across the landscape, especially connecting the Cascades to the Coast Range and Klamath Mountains. The FEIS fails

to take a hard look at the adverse effects of leaving these important forests unprotected and vulnerable to logging.



Appendix X of the PRMP/FEIS says "Until implementation of a barred owl management program has begun, the BLM would not authorize any timber harvest after the signing of the ROD/RMP that it determines would cause incidental take of northern spotted owls…" While we appreciate the intent, this presents an irrational trade-off between long-lasting habitat removal, and ephemeral barred owl removal. It is arbitrary for BLM to justify take of spotted owls based on an unproven conservation program with ephemeral effects. The FEIS/PRMP failed to disclose and analyze the asymmetric effects of habitat removal (which has long-term effects) versus barred owl removal (which has short-term effects). BLM cannot assure that barred owl removal will be supported, funded, and implemented over the long term. If barred owl removal efforts ever stop for any reason, the barred owl population may well recover relatively quickly – much more quickly than habitat can be regrown. It is therefore arbitrary and capricious to link habitat removal and barred owl removal. Spotted owl recovery requires both conservation of owl habitat AND removal of barred owl – not one or the other.

BLM asserts that "Current research provides no evidence that the BLM can manage individual forest stands to provide northern spotted owls with a competitive advantage over barred owls." RTC 338, FEIS/PRMP at 1983. This is incorrect. BLM can enhance the probability that spotted owls and barred owls can co-exist by retaining more suitable habitat. Logging that removes or degrades suitable habitat, or prevents of delays recruitment of suitable habitat, puts the two owl species at greater risk of adverse competitive interactions. This was explained in detail in public comments.

BLM did not respond to these public comments highlighting the need for greater conservation of suitable owl habitat in light of the barred owl invasion which undermines a critical assumption underlying the Northwest Forest Plan - that assumption is that all *suitable* owl habitat is *available* to spotted owls. With the invasion of the barred owl, tens of thousands of acres old forest spotted owl habitat (which was in short supply even before the barred owl arrived) are now occupied and defended by barred owl to the exclusion of spotted owls. Many acres that were previously assumed to be available to spotted owls are no longer available because the barred owl is there. The logical response now is to protect and restore more suitable owl habitat to reach previously established spotted owl recovery goals. The FEIS/PRMP does not rationally explain its failure to adopt this approach to protection of owl habitat.

A recent telemetry study showed that in fragmented landscapes barred owls have a survival advantage relative to spotted owls, but that survival advantage diminishes in landscapes with a higher proportion of older forest. In other words, conservation of mature & old-growth forest should be favored because spotted owls are able to compete nearly equally with barred owls in landscapes with a high proportion of old forest. By allowing removal of suitable owl habitat, the PRMP reduces the chances that the two owls can co-exist. The FEIS failed to take a hard look at the adverse effects of logging currently suitable owl habitat or delaying recruitment of owl habitat. The FEIS under-estimates the adverse effects of logging and fails to inform the decision-maker of opportunities to conserve spotted owls and help them co-exist with barred owls by protecting suitable owl habitat and allowing additional suitable habitat to be recruited.

Rigorous research by Wiens et al (2014) has shown that survival of spotted owls and barred owls increases when there is more suitable habitat. These studies provide evidence that BLM can manage to increase the chances of co-existence if they avoid regeneration harvest that removes suitable owl habitat.

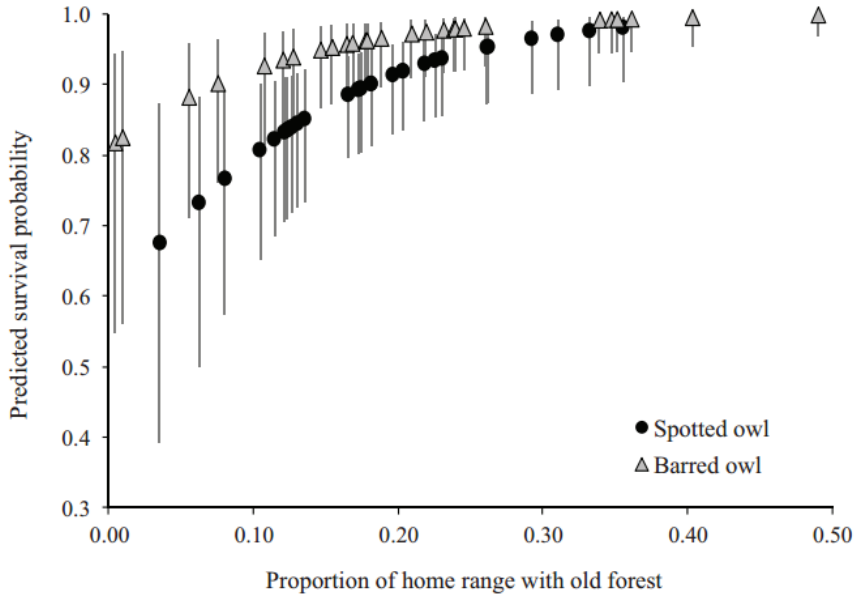


Figure 13. Predicted relationship between mean proportion of old conifer forest within the home range and seasonal (6-month) survival probabilities of radio-marked northern spotted owls ($n = 29$) and barred owls ($n = 28$) in western Oregon, USA, 2007–2009. We calculated point estimates with 95% confidence intervals at observed mean values for each individual under the best-supported model of survival, which included the additive effects of species and proportion of old conifer forest within the home range.

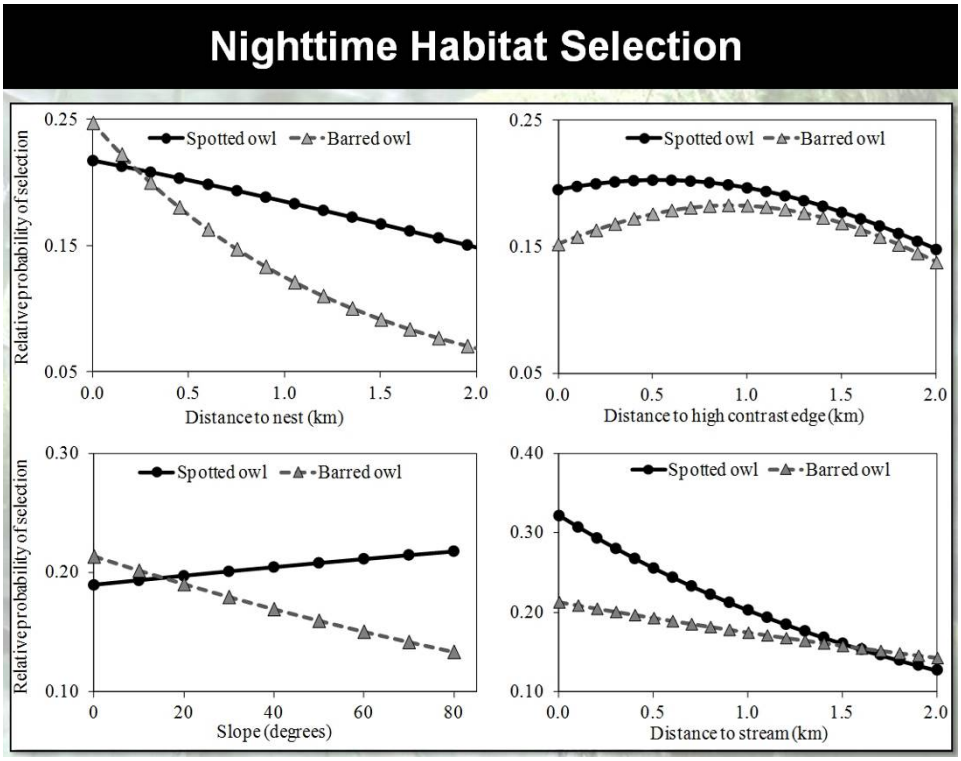
Wiens, J.D., Anthony, R.G., and E.D. Forsman. 2014: Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. Wildlife Monographs 185:1–50; 2014; DOI: 10.1002/wmon.1009. https://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/48214/AnthonyRobertFisheriesWildlifeCompetitiveInteractions.pdf

This view is corroborated by owl biologist David Wiens who was interviewed on the Lehrer NewsHour. He said: "The more habitat you protect, the more you're going to alleviate the competitive pressure between the species. Rather than reducing it and increasing the competitive pressure between these two species, we need to provide as much habitat as possible for them." DAVID WIENS. NewsHour interview. "Biologists Struggle to Save the Spotted Owl." December 18, 2007. http://www.pbs.org/newshour/bb/science/july-dec07/owl_12-18.html. Robert Anthony agrees, "If you start cutting habitat for either bird, you just increase competitive pressure." Welch, Craig. 2009. The Spotted Owl's New Nemesis. Smithsonian Magazine. January 2009. http://www.smithsonianmag.com/science-nature/The-Spotted-Owls-New-Nemesis.html?c=y&page=2 And in the same article Eric Forsman added "You could shoot

barred owls until you're blue in the face," he said. "But unless you're willing to do it forever, it's just not going to work."

The FEIS/PRMP says, “Currently there is no substantive empirical evidence that northern spotted owls would be able to coexist with barred owls in the future as the effects of competitive interactions on the northern spotted owl are continuing to increase …” This statement missed the point of considerable available evidence which shows that if BLM conserves all suitable habitat, BLM could increase the chances of co-existence and delay competitive exclusion, thus giving time for recovery options to be implemented (such as barred owl removal and recruitment of additional suitable habitat). BLM failed to take a hard look at the impacts of logging suitable habitat and the benefits of conserving all suitable habitat. BLM says that the DEIS “analyzed the effects of a No Timber Harvest reference analysis, in which the BLM forecast northern spotted owl habitat and population responses to a hypothetical management scenario in which the BLM conducted no timber harvest. That analysis concluded that protecting all habitats, in the absence of barred owl control, would not substantively curb the continued northern spotted owl population decline….” *See* FEIS/PRMP, App. W at 1991. BLM’s statement sets up a straw-man as a hypothetical. Of course spotted owls will continue to decline if the barred owl is not controlled. BLM failed to consider the reasonable effects of conserving all suitable habitat while ALSO removing barred owls. This skewed assessment is arbitrary and contrary to law.

Similarly, BLM can increase the chances of co-existence of spotted owls and barred owls by retaining the wide riparian reserves under the No Action alternative. Spotted owls rely disproportionally on lower slopes near streams. Conservation of wide riparian reserves may be critical to the long-term co-existence of spotted owls and barred owls. Wiens (2012) concluded “Conservation Implications: Results emphasize the importance of old conifer forest and moist streamside habitats to resource partitioning [between spotted owls and barred owls].” See the lower right graph in the figure below.



Wiens, D.J. 2012. Dietary Overlap between Northern Spotted Owls and Barred Owls in Western Oregon, *workshop* What's for Dinner: Spotted Owl Prey 2012 http://ecoshare.info/projects/central-cascade-adaptive-management-partnership/workshops/spotted-owl/; http://ecoshare.info/wp-content/uploads/2012/08/Barred-compared-to-spotted-Owl-diets.ppt

All of the above information confirms that the analysis of the effects of the PRMP on spotted owls in the FEIS is incomplete, fails to address relevant and available scientific information and hence is arbitrary and contrary to NEPA, the ESA and other laws and regulations that apply to the BLM.

XXIV. WILD AND SCENIC RIVERS

The BLM failed to identify streams being considered by congress for inclusion in the national wild and scenic rivers system and also seek out candidate streams with mixed BLM and Forest Service management.

The BLM cannot pre-empt the will of Congress by failing to protect streams currently being considered in federal legislation. Specifically the streams identified for Wild and Scenic designation in Senator Wyden's O&C Bill must be treated as candidate wild and scenic rivers. The O&C Bill identifies the Nestucca River, Walker Creek, North Fork Silver Creek, Jenny Creek, Spring Creek, Lobster Creek, Wasson Creek and Franklin Creek. These streams and

adjacent ¼ mile must be reserved from timber harvest modeling and any management actions that would damage wild and scenic characteristics. These streams and adjacent lands also should be identified for mineral withdrawal in the FEIS/PRMP. Additionally the BLM must coordinate with the Forest Service to conduct a geospatially explicit analysis to identify potential BLM wild and scenic streams that are adjacent existing Forest Service candidate wild and scenic streams. Some examples are Rough and Ready Creek, West Fork Illinois River, Sucker Creek, and Althouse Creek in the Medford District.

The failure of the FEIS/PRMP to include these steps is contrary to law.

CONCLUSION

The Final Environmental Impact Statement and Proposed Resource Management Plan are arbitrary and capricious and contrary to law for the reasons stated in this protest. Because of these significant flaws, the protested portions of the FEIS and PRMP cannot be legally adopted.

BLM should not proceed to finalize the PRMP until these problems are corrected. Instead, the protesting parties request that BLM discontinue its WOPR process, unless BLM first supplements the FEIS to correct the errors identified above, and re-issues a PRMP that complies with science and law.

Sincerely,

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